Sun™ Technical Compute Farm Installation and Service Manual

Sun Microsystems, Inc.
901 San Antonio Road
Palo Alto, CA 94303-4900 U.S.A.
650-960-1300

Part No. 806-7328-10
December 2000, Revision A

Send comments about this document to: docfeedback@sun.com

Copyright 2000 Sun Microsystems, Inc., 901 San Antonio Road, Palo Alto, CA 94303-4900 U.S.A. All rights reserved.

This product or document is distributed under licenses restricting its use, copying, distribution, and decompilation. No part of this product or document may be reproduced in any form by any means without prior written authorization of Sun and its licensors, if any. Third-party software, including font technology, is copyrighted and licensed from Sun suppliers.

Parts of the product may be derived from Berkeley BSD systems, licensed from the University of California. UNIX is a registered trademark in the U.S. and other countries, exclusively licensed through X / Open Company, Ltd.

Sun, Sun Microsystems, the Sun logo, AnswerBook2, docs.sun.com, Sun StorEdge, Sun Enterprise, Sun Management Center, Solaris Resource Manager,Ultra, UltraSPARC, SunVTS, SPARC, and Solaris are trademarks, registered trademarks, or service marks of Sun Microsystems, Inc. in the U.S. and other countries. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the U.S. and other countries. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc.

The OPEN LOOK and Sun™ Graphical User Interface was developed by Sun Microsystems, Inc. for its users and licensees. Sun acknowledges the pioneering efforts of Xerox in researching and developing the concept of visual or graphical user interfaces for the computer industry. Sun holds a non-exclusive license from Xerox to the Xerox Graphical User Interface, which license also covers Sun's licensees who implement OPEN LOOK GUIs and otherwise comply with Sun's written license agreements.

Federal Acquisitions: Commercial Software—Government Users Subject to Standard License Terms and Conditions.

DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.

Copyright 2000 Sun Microsystems, Inc., 901 San Antonio Road, Palo Alto, CA 94303-4900 Etats-Unis. Tous droits réservés.

Ce produit ou document est distribué avec des licences qui en restreignent l'utilisation, la copie, la distribution, et la décompilation. Aucune partie de ce produit ou document ne peut être reproduite sous aucune forme, par quelque moyen que ce soit, sans l'autorisation préalable et écrite de Sun et de ses bailleurs de licence, s'il y en a. Le logiciel détenu par des tiers, et qui comprend la technologie relative aux polices de caractères, est protégé par un copyright et licencié par des fournisseurs de Sun.

Des parties de ce produit pourront être dérivées des systèmes Berkeley BSD licenciés par l'Université de Californie. UNIX est une marque déposée aux Etats-Unis et dans d'autres pays et licenciée exclusivement par X / Open Company, Ltd.

Sun, Sun Microsystems, le logo Sun, AnswerBook2, docs.sun.com, Sun StorEdge, Sun Enterprise, Sun Management Center, Solaris Resource Manager,Ultra, UltraSPARC, SunVTS, SPARC, et Solaris sont des marques de fabrique ou des marques déposées, ou marques de service, de Sun Microsystems, Inc. aux Etats-Unis et dans d'autres pays. Toutes les marques SPARC sont utilisées sous licence et sont des marques de fabrique ou des marques déposées de SPARC International, Inc. aux Etats-Unis et dans d'autres pays. Les produits portant les marques SPARC sont basés sur une architecture développée par Sun Microsystems, Inc.

L'interface d'utilisation graphique OPEN LOOK et Sun™ a été développée par Sun Microsystems, Inc. pour ses utilisateurs et licenciés. Sun reconnaît les efforts de pionniers de Xerox pour la recherche et le développement du concept des interfaces d'utilisation visuelle ou graphique pour l'industrie de l'informatique. Sun détient une licence non exclusive de Xerox sur l'interface d'utilisation graphique Xerox, cette licence couvrant également les licenciés de Sun qui mettent en place l'interface d'utilisation graphique OPEN LOOK et qui en outre se conforment aux licences écrites de Sun.

LA DOCUMENTATION EST FOURNIE "EN L'ETAT" ET TOUTES AUTRES CONDITIONS, DECLARATIONS ET GARANTIES EXPRESSES OU TACITES SONT FORMELLEMENT EXCLUES, DANS LA MESURE AUTORISEE PAR LA LOI APPLICABLE, Y COMPRIS NOTAMMENT TOUTE GARANTIE IMPLICITE RELATIVE A LA QUALITE MARCHANDE, A L'APTITUDE A UNE UTILISATION PARTICULIERE OU A L'ABSENCE DE CONTREFAÇON.

Please
Recycle

Adobe PostScript

Declaration of Conformity

Compliance ID: 1602

Product Name: Sun StorEdge Expansion Cabinet

This product has been tested and complies with the following rules and requirements.

EMC

USA—FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

European Union—EC

This equipment complies with the following requirements of the EMC Directive 89/336/EEC:

EN55022/CISPR22 (1985)		Class A
EN50082-1	IEC801-2 (1991)	4 kV (Direct), 8 kV (Air)
	IEC801-3 (1984)	3 V/m
	IEC801-4 (1988)	1.0 kV Power Lines, 0.5 kV Signal Lines
EN61000-3-2/IEC1000-3-2 (1994)		Pass

Safety

This equipment complies with the following requirements of the Low Voltage Directive 73/23/EEC:

EC Type Examination Certificates:

EN60950/IEC950 (1993)	TUV Rheinland License # S9872021
EN60950 w/Nordic Deviations	CB Scheme Certificate # UL2257-138989/USA

Supplementary Information

This product was tested and complies with all the requirements for the CE Mark (when connected to a Sun workstation or server).

/S/

Dennis P. Symanski DATE
Manager, Product Compliance

Sun Microsystems, Inc.
901 San Antonio Road, M/S UMPK15-102
Palo Alto, CA 94303, USA

Tel: 650-786-3255
Fax: 650-786-3723

/S/

John Shades DATE
Quality Assurance Manager

Sun Microsystems Scotland, Limited
Springfield, Linlithgow
West Lothian, EH49 7LR
Scotland, United Kingdom

Tel: 0506-670000
Fax: 0506 760011

Regulatory Compliance Statements

Your Sun product is marked to indicate its compliance class:

- Federal Communications Commission (FCC) — USA
- Industry Canada Equipment Standard for Digital Equipment (ICES-003) - Canada
- Voluntary Control Council for Interference (VCCI) — Japan
- Bureau of Standards Metrology and Inspection (BSMI) — Taiwan

Please read the appropriate section that corresponds to the marking on your Sun product before attempting to install the product.

FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables to comply with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted-pair (UTP) cables.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

FCC Class B Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted pair (UTP) cables.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

ICES-003 Class A Notice - Avis NMB-003, Classe A

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

ICES-003 Class B Notice - Avis NMB-003, Classe B

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

VCCI 基準について

クラス A VCCI 基準について

クラス A VCCI の表示があるワークステーションおよびオプション製品は、クラス A 情報技術装置です。これらの製品には、下記の項目が該当します。

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

クラス B VCCI 基準について

クラス B VCCI の表示 があるワークステーションおよびオプション製品は、クラス B 情報技術装置です。これらの製品には、下記の項目が該当します。

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをしてください。

BSMI Class A Notice

The following statement is applicable to products shipped to Taiwan and marked as Class A on the product compliance label.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用
時，可能會造成射頻 干擾，在這種情況下，
使用者 會被要求採取某些適當的對策。

Safety Agency Compliance Statements

Read this section before beginning any procedure. The following text provides safety precautions to follow when installing a Sun Microsystems product.

Safety Precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions and instructions marked on the equipment.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

Symbols

The following symbols may appear in this book:

Caution – There is risk of personal injury and equipment damage. Follow the instructions.

Caution – Hot surface. Avoid contact. Surfaces are hot and may cause personal injury if touched.

Caution – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

On – Applies AC power to the system.

Depending on the type of power switch your device has, one of the following symbols may be used:

Off - Removes AC power from the system.

Standby – The On/Standby switch is in the standby position.

Modifications to Equipment

Do not make mechanical or electrical modifications to the equipment. Sun Microsystems is not responsible for regulatory compliance of a modified Sun product.

Placement of a Sun Product

Caution – Do not block or cover the openings of your Sun product. Never place a Sun product near a radiator or heat register. Failure to follow these guidelines can cause overheating and affect the reliability of your Sun product.

Caution – The workplace-dependent noise level defined in DIN 45 635 Part 1000 must be 70Db(A) or less.

SELV Compliance

Safety status of I/O connections comply to SELV requirements.

Power Cord Connection

Caution – Sun products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electric shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

Caution – Not all power cords have the same current ratings. Household extension cords do not have overload protection and are not meant for use with computer systems. Do not use household extension cords with your Sun product.

Caution – Your Sun product is shipped with a grounding type (three-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet.

The following caution applies only to devices with a Standby power switch:

Caution – The power switch of this product functions as a standby type device only. The power cord serves as the primary disconnect device for the system. Be sure to plug the power cord into a grounded power outlet that is nearby the system and is readily accessible. Do not connect the power cord when the power supply has been removed from the system chassis.

Einhaltung sicherheitsbehördlicher Vorschriften

Auf dieser Seite werden Sicherheitsrichtlinien beschrieben, die bei der Installation von Sun-Produkten zu beachten sind.

Sicherheitsvorkehrungen

Treffen Sie zu Ihrem eigenen Schutz die folgenden Sicherheitsvorkehrungen, wenn Sie Ihr Gerät installieren:

- Beachten Sie alle auf den Geräten angebrachten Warnhinweise und Anweisungen.
- Vergewissern Sie sich, daß Spannung und Frequenz Ihrer Stromquelle mit der Spannung und Frequenz übereinstimmen, die auf dem Etikett mit den elektrischen Nennwerten des Geräts angegeben sind.
- Stecken Sie auf keinen Fall irgendwelche Gegenstände in Öffnungen in den Geräten. Leitfähige Gegenstände könnten aufgrund der möglicherweise vorliegenden gefährlichen Spannungen einen Kurzschluß verursachen, der einen Brand, Stromschlag oder Geräteschaden herbeiführen kann.

Symbole

Die Symbole in diesem Handbuch haben folgende Bedeutung:

Achtung – Gefahr von Verletzung und Geräteschaden. Befolgen Sie die Anweisungen.

Achtung – Hohe Temperatur. Nicht berühren, da Verletzungsgefahr durch heiße Oberfläche besteht.

Achtung – Gefährliche Spannungen. Anweisungen befolgen, um Stromschläge und Verletzungen zu vermeiden.

Ein – Setzt das System unter Wechselstrom.

Je nach Netzschaltertyp an Ihrem Gerät kann eines der folgenden Symbole benutzt werden:

Aus – Unterbricht die Wechselstromzufuhr zum Gerät.

Wartezustand (Stand-by-Position) - Der Ein-/Wartezustand-Schalter steht auf Wartezustand. Änderungen an Sun-Geräten.

Nehmen Sie keine mechanischen oder elektrischen Änderungen an den Geräten vor. Sun Microsystems, übernimmt bei einem Sun-Produkt, das geändert wurde, keine Verantwortung für die Einhaltung behördlicher Vorschriften

Aufstellung von Sun-Geräten

Achtung – Um den zuverlässigen Betrieb Ihres Sun-Geräts zu gewährleisten und es vor Überhitzung zu schützen, dürfen die Öffnungen im Gerät nicht blockiert oder verdeckt werden. Sun-Produkte sollten niemals in der Nähe von Heizkörpern oder Heizluftklappen aufgestellt werden.

Achtung – Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70Db(A) oder weniger.

Einhaltung der SELV-Richtlinien

Die Sicherung der I/O-Verbindungen entspricht den Anforderungen der SELV-Spezifikation.

Anschluß des Netzkabels

Achtung – Sun-Produkte sind für den Betrieb an Einphasen-Stromnetzen mit geerdetem Nulleiter vorgesehen. Um die Stromschlaggefahr zu reduzieren, schließen Sie Sun-Produkte nicht an andere Stromquellen an. Ihr Betriebsleiter oder ein qualifizierter Elektriker kann Ihnen die Daten zur Stromversorgung in Ihrem Gebäude geben.

Achtung – Nicht alle Netzkabel haben die gleichen Nennwerte. Herkömmliche, im Haushalt verwendete Verlängerungskabel besitzen keinen Überlastungsschutz und sind daher für Computersysteme nicht geeignet.

Achtung – Ihr Sun-Gerät wird mit einem dreiadrigen Netzkabel für geerdete Netzsteckdosen geliefert. Um die Gefahr eines Stromschlags zu reduzieren, schließen Sie das Kabel nur an eine fachgerecht verlegte, geerdete Steckdose an.

Die folgende Warnung gilt nur für Geräte mit Wartezustand-Netzschalter:

Achtung – Der Ein/Aus-Schalter dieses Geräts schaltet nur auf Wartezustand (Stand-By-Modus). Um die Stromzufuhr zum Gerät vollständig zu unterbrechen, müssen Sie das Netzkabel von der Steckdose abziehen. Schließen Sie den Stecker des Netzkabels an eine in der Nähe befindliche, frei zugängliche, geerdete Netzsteckdose an. Schließen Sie das Netzkabel nicht an, wenn das Netzteil aus der Systemeinheit entfernt wurde.

Conformité aux normes de sécurité

Ce texte traite des mesures de sécurité qu'il convient de prendre pour l'installation d'un produit Sun Microsystems.

Mesures de sécurité

Pour votre protection, veuillez prendre les précautions suivantes pendant l'installation du matériel :

- Suivre tous les avertissements et toutes les instructions inscrites sur le matériel.
- Vérifier que la tension et la fréquence de la source d'alimentation électrique correspondent à la tension et à la fréquence indiquées sur l'étiquette de classification de l'appareil.
- Ne jamais introduire d'objets quels qu'ils soient dans une des ouvertures de l'appareil. Vous pourriez vous trouver en présence de hautes tensions dangereuses. Tout objet conducteur introduit de la sorte pourrait produire un court-circuit qui entraînerait des flammes, des risques d'électrocution ou des dégâts matériels.

Symboles

Vous trouverez ci-dessous la signification des différents symboles utilisés :

Attention: – risques de blessures corporelles et de dégâts matériels. Veuillez suivre les instructions.

Attention: – surface à température élevée. Evitez le contact. La température des surfaces est élevée et leur contact peut provoquer des blessures corporelles.

Attention: – présence de tensions dangereuses. Pour éviter les risques d'électrocution et de danger pour la santé physique, veuillez suivre les instructions.

MARCHE – Votre système est sous tension (courant alternatif).

Un des symboles suivants sera peut-être utilisé en fonction du type d'interrupteur de votre système:

ARRET - Votre système est hors tension (courant alternatif).

VEILLEUSE – L'interrupteur Marche / Veilleuse est en position « Veilleuse ».

Modification du matériel

Ne pas apporter de modification mécanique ou électrique au matériel. Sun Microsystems n'est pas responsable de la conformité réglementaire d'un produit Sun qui a été modifié.

Positionnement d'un produit Sun

Attention: – pour assurer le bon fonctionnement de votre produit Sun et pour l'empêcher de surchauffer, il convient de ne pas obstruer ni recouvrir les ouvertures prévues dans l'appareil. Un produit Sun ne doit jamais être placé à proximité d'un radiateur ou d'une source de chaleur.

Attention: – Le niveau de pression acoustique au poste de travail s'élève selon la norme DIN 45 635 section 1000, à 70 dB (A) ou moins.

Conformité SELV

Sécurité : les raccordements E / S sont conformes aux normes SELV.

Connexion du cordon d’alimentation.

Attention: – les produits Sun sont conçus pour fonctionner avec des alimentations monophasées munies d’un conducteur neutre mis à la terre. Pour écarter les risques d’électrocution, ne pas brancher de produit Sun dans un autre type d’alimentation secteur. En cas de doute quant au type d’alimentation électrique du local, veuillez vous adresser au directeur de l’exploitation ou à un électricien qualifié.

Attention: – tous les cordons d’alimentation n’ont pas forcément la même puissance nominale en matière de courant. Les rallonges d’usage domestique n’offrent pas de protection contre les surcharges et ne sont pas prévues pour les systèmes d’ordinateurs. Ne pas utiliser de rallonge d’usage domestique avec votre produit Sun.

Attention: – votre produit Sun a été livré équipé d’un cordon d’alimentation à trois fils (avec prise de terre). Pour écarter tout risque d’électrocution, branchez toujours ce cordon dans une prise mise à la terre.

L'avertissement suivant s'applique uniquement aux systèmes équipés d'un interrupteur VEILLEUSE:

Attention: – le commutateur d’alimentation de ce produit fonctionne comme un dispositif de mise en veille uniquement. C’est la prise d’alimentation qui sert à mettre le produit hors tension. Veillez donc à installer le produit à proximité d’une prise murale facilement accessible. Ne connectez pas la prise d’alimentation lorsque le châssis du système n’est plus alimenté.

Normativas de seguridad

El siguiente texto incluye las medidas de seguridad que se deben seguir cuando se instale algún producto de Sun Microsystems.

Precauciones de seguridad

Para su protección observe las siguientes medidas de seguridad cuando manipule su equipo:

- Siga todas los avisos e instrucciones marcados en el equipo.
- Asegúrese de que el voltaje y la frecuencia de la red eléctrica concuerdan con las descritas en las etiquetas de especificaciones eléctricas del equipo.
- No introduzca nunca objetos de ningún tipo a través de los orificios del equipo. Pueden haber voltajes peligrosos. Los objetos extraños conductores de la electricidad pueden producir cortocircuitos que provoquen un incendio, descargas eléctricas o daños en el equipo.

Símbolos

En este libro aparecen los siguientes símbolos:

Precaución – Existe el riesgo de lesiones personales y daños al equipo. Siga las instrucciones.

Precaución – Superficie caliente. Evite el contacto. Las superficies están calientes y pueden causar daños personales si se tocan.

Precaución – Voltaje peligroso presente. Para reducir el riesgo de descarga y daños para la salud siga las instrucciones.

Encendido – Aplica la alimentación de CA al sistema.

Según el tipo de interruptor de encendido que su equipo tenga, es posible que se utilice uno de los siguientes símbolos:

Apagado - Elimina la alimentación de CA del sistema.

En espera – El interruptor de Encendido/En espera se ha colocado en la posición de En espera.

Modificaciones en el equipo

No realice modificaciones de tipo mecánico o eléctrico en el equipo. Sun Microsystems no se hace responsable del cumplimiento de las normativas de seguridad en los equipos Sun modificados.

Ubicación de un producto Sun

Precaución – Para asegurar la fiabilidad de funcionamiento de su producto Sun y para protegerlo de sobrecalentamien-tos no deben obstruirse o taparse las rejillas del equipo. Los productos Sun nunca deben situarse cerca de radiadores o de fuentes de calor.

Precaución – De acuerdo con la norma DIN 45 635, Parte 1000, se admite un nivel de presión acústica para puestos de trabajo máximo de 70Db(A).

Cumplimiento de la normativa SELV

El estado de la seguridad de las conexiones de entrada/salida cumple los requisitos de la normativa SELV.

Conexión del cable de alimentación eléctrica

Precaución – Los productos Sun están diseñados para trabajar en una red eléctrica monofásica con toma de tierra. Para reducir el riesgo de descarga eléctrica, no conecte los productos Sun a otro tipo de sistema de alimentación eléctrica. Póngase en contacto con el responsable de mantenimiento o con un electricista cualificado si no está seguro del sistema de alimentación eléctrica del que se dispone en su edificio.

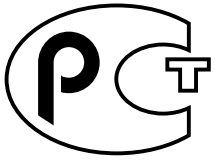
Precaución – No todos los cables de alimentación eléctrica tienen la misma capacidad. Los cables de tipo doméstico no están provistos de protecciones contra sobrecargas y por tanto no son apropiados para su uso con computadores. No utilice alargadores de tipo doméstico para conectar sus productos Sun.

Precaución – Con el producto Sun se proporciona un cable de alimentación con toma de tierra. Para reducir el riesgo de descargas eléctricas conéctelo siempre a un enchufe con toma de tierra.

La siguiente advertencia se aplica solamente a equipos con un interruptor de encendido que tenga una posición "En espera":

Precaución – El interruptor de encendido de este producto funciona exclusivamente como un dispositivo de puesta en espera. El enchufe de la fuente de alimentación está diseñado para ser el elemento primario de desconexión del equipo. El equipo debe instalarse cerca del enchufe de forma que este último pueda ser fácil y rápidamente accesible. No conecte el cable de alimentación cuando se ha retirado la fuente de alimentación del chasis del sistema.

GOST-R Certification Mark



Contents

Declaration of Conformity iii

Regulatory Compliance Statements v

Safety Agency Compliance Statements ix

Preface xxxiii

1. Sun Technical Compute Farm Overview 1-1

1.1 Typical Sun TCF System Applications 1-1

1.2 Hardware Description 1-2

1.2.1 Base Rack 1-3

1.2.2 Expansion Rack 1-6

1.2.3 Star Rack 1-9

1.3 System Devices 1-12

1.3.1 Rack 1-12

1.3.2 Disk Array 1-12

1.3.3 File Server and Compute Engine 1-13

1.3.4 Cisco C3524 and C3508 Ethernet Switches 1-17

1.3.4.1 C3524 Ethernet Switch 1-17

1.3.4.2 C3508 Ethernet Switch 1-18

1.3.5 Access Server 1-20

1.4 I/O Devices 1-21

2. Preparing for Assembly and Installation 2-1

2.1 Site Planning 2-1

2.2 Space Planning 2-2

2.3 Rack Physical Characteristics 2-3

2.4 Environmental Requirements 2-3

2.5 Heating, Ventilation, and Air Conditioning 2-4

2.6 Clearance and Service Access 2-5

3. Unpacking and Installing the Rack 3-1

3.1 Unpacking the Rack 3-1

3.2 Moving and Placing the Rack 3-2

3.3 Adjusting the Leveling Pads 3-3

3.4 Installing the Stabilizer Legs 3-4

3.5 Installing the Floor Brackets 3-6

3.6 Cabling the Rack 3-8

3.6.1 Preparing the Rack 3-8

3.6.2 Connecting the Power Cord 3-11

3.6.3 Connecting the Ground Strap 3-14

3.6.4 Final Cabling Tasks 3-15

4. Installing a Second Disk Array 4-1

4.1 Installing the Rails 4-2

4.2 Installing the Chassis in the Rack 4-4

4.3 Connecting the Power Cable 4-6

4.4 Installing Additional Interface Boards and GBICs 4-8

4.5 Disk Array-to-File Server Cabling 4-9

4.6 Disk Array 1-to-Disk Array 2 Cabling 4-9

4.7 Repositioning the Airflow Baffle 4-9

4.7.1 Removing the Airflow Baffle 4-10

4.7.1.1 Removing the Filler Panel Assembly 4-10

4.7.1.2 Removing the Side Baffle 4-11

4.7.1.3 Removing the Main Baffle 4-11

4.7.2 Replacing the Airflow Baffle 4-12

4.7.2.1 Replacing the Main Baffle 4-12

4.7.2.2 Replacing the Side Baffle 4-13

4.7.2.3 Replacing the Filler Panel Assembly 4-14

4.8 Reassembling the Rack 4-16

5. Cabling the Sun TCF Devices 5-1

5.1 Small Farm Configuration Example 5-1

5.1.1 Cabling the Disk Array for the Small Farm Configuration 5-7

5.1.1.1 Disk Array 1-to-File Server Cabling 5-8

5.1.1.2 Point-to-Point Cabling With Second Disk Array Installed 5-8

5.1.2 Cabling the File Server for the Small Farm Configuration 5-9

5.1.3 Cabling the Compute Engine for the Small Farm Configuration 5-11

5.1.4 Cabling the C3524 Ethernet Switch for the Small Farm Configuration 5-12

5.1.5 Cabling the Access Server for Small Farm Configuration 5-14

5.2 Medium Farm Configuration Example 1 5-15

5.2.1 Cabling the Disk Array for the Medium Farm Configuration Example 1 5-21

5.2.2 Cabling the File Server for the Medium Farm Configuration Example 1 5-21

5.2.3 Cabling the Compute Engines for the Medium Farm Configuration Example 1 5-21

5.2.4 Cabling the C3524 Ethernet Switch for the Medium Farm Configuration Example 1 5-23

5.2.5 Cabling the Access Server 2 for the Medium Farm Configuration Example 1 5-25

5.3 Medium Farm Configuration Example 2 5-27

5.3.1 Cabling the Disk Array for the Medium Farm Configuration Example 2 5-31

5.3.2 Cabling the File Server for the Medium Farm Configuration Example 2 5-31

5.3.3 Cabling the Compute Engine for the Medium Farm Configuration Example 2 5-31

5.3.4 Cabling the C3524 Ethernet Switches for the Medium Farm Configuration Example 2 5-31

5.3.5 Cabling the Access Server for the Medium Farm Configuration Example 2 5-34

5.4 Large Farm Configuration Example 5-34

5.4.1 Cabling the Disk Array for the Large Farm Configuration 5-39

5.4.1.1 Disk Array-to-File Server Cabling 5-40

5.4.1.2 Disk Array 1-to-Disk Array 2 Cabling 5-41

5.4.2 Cabling the File Server for the Large Farm Configuration 5-42

5.4.3 Cabling the Compute Engine for the Large Farm Configuration 5-42

5.4.4 Cabling the C3524 Ethernet Switches for the Large Farm Configuration 5-42

5.4.5 Cabling the Access Server for the Large Farm Configuration 5-44

5.4.6 Cabling the C3508 Ethernet Switch 5-45

6. Powering On and Off 6-1

6.1 Preparing to Power On 6-1

6.2 Power On and Off Sequence 6-2

6.2.1 Powering On the Rack 6-3

6.2.2 Powering Off the Rack 6-5

6.2.3 Powering On and Off the Access Server 6-6

6.2.4 Powering On and Off the C3524 and C3508 Ethernet Switches 6-6

6.2.5 Powering On the Disk Array 6-7

6.2.6 Powering Off the Disk Array 6-7

6.2.7 Powering On the File Server or Compute Engine 6-8

6.2.8 Powering Off the File Server or Compute Engine 6-10

7. Connecting a System Console and Configuring the Access Server 7-1

7.1 Installing a System Console 7-1

7.2 Configuring the Access Server 7-3

7.3 Reverting To Factory Settings 7-10

7.4 Configuring the File Server and Compute Engines 7-10

8. Fault Isolation and Troubleshooting 8-1

8.1 Sun Management Center 2.1 Software 8-1

8.2 SunVTS Description 8-2

8.2.1 SunVTS Requirements 8-3

8.2.2 SunVTS References 8-3

8.3 Troubleshooting the Sun TCF System 8-4

8.3.1 Preparing to Service the Disk Array 8-4

8.3.2 Preparing to Service the File Server or Compute Engine 8-4

8.3.3 Preparing to Service the C3524 or C3508 Ethernet Switches 8-5

8.3.4 Preparing to Service the Access Server 8-5

9. Removing, Replacing, and Cabling Devices 9-1

9.1 Access Server 9-2

9.1.1 Removing the Access Server 9-2

9.1.2 Replacing the Access Server 9-4

9.1.3 Connecting the Access Server to the Network 9-6

9.1.4 Connecting the Access Server to a System Terminal 9-7

9.2 C3524 and C3508 Ethernet Switches 9-7

9.2.1 Removing the Ethernet Switches 9-8

9.2.2 Replacing the Ethernet Switches 9-10

9.2.3 Connecting the Ethernet Switches to the Network 9-12

9.2.4 Installing the Ethernet Switch 1000BASE-X GBIC Module 9-13

9.3 File Server or Compute Engine 9-14

9.3.1 Removing the File Server or Compute Engine 9-15

9.3.2 Removing and Replacing the File Server or Compute Engine Main Logic Board 9-18

9.3.3 Replacing the File Server or Compute Engine 9-18

9.3.4 Positioning the File Server or Compute Engine for Service 9-23

9.3.5 Removing and Replacing File Server or Compute Engine Components 9-26

9.3.5.1 Removing and Replacing the File Server or Compute Engine FRUs 9-27

9.3.5.2 Removing a File Server Host Adapter 9-27

9.3.5.3 Replacing a File Server Host Adapter 9-29

9.3.5.4 Removing the File Server GigabitEthernet Adapter 9-30

9.3.5.5 Replacing the File Server GigabitEthernet Adapter 9-32

9.3.6 Securing the File Server or Compute Engine After Service 9-33

9.3.7 Cabling the File Server or Compute Engine 9-35

9.4 Disk Array 9-35

9.4.1 Removing a Disk Array 9-36

9.4.2 Replacing a Disk Array 9-38

9.4.3 Cabling a Disk Array 9-39

9.4.4 Removing and Replacing the Disk Array FRUs 9-39

10. Removing and Replacing Rack FRUs 10-1

10.1 Tools Required 10-1

10.2 Key Switch 10-2

10.2.1 Removing the Key Switch 10-2

10.2.2 Replacing the Key Switch 10-3

10.3 AC Input Cable Assembly 10-4

10.3.1 Removing the AC Input Cable Assembly 10-4

10.3.2 Replacing the AC Input Cable Assembly 10-5

10.4 Power Sequencer 10-6

10.4.1 Removing the Power Sequencer 10-6

10.4.2 Replacing the Power Sequencer 10-7
10.5 Side Panel 10-7
10.5.1 Removing the Side Panel 10-7
10.5.2 Replacing the Side Panel 10-8

A. Product Specifications A-1
A.1 Physical Specifications A-1
A.2 Supporting Documentation A-3
A.3 Electrical Specifications A-4
A.4 Environmental Requirements A-5
A.5 Clearance and Service Access A-6

B. Parts Table B-1

Figures

FIGURE 1-1 Sun TCF Base Rack Front View 1-4

FIGURE 1-2 Sun TCF Base Rack Back View 1-5

FIGURE 1-3 Sun TCF Expansion Rack Front View 1-7

FIGURE 1-4 Sun TCF Expansion Rack Back View 1-8

FIGURE 1-5 Sun TCF Star Rack Front View 1-10

FIGURE 1-6 Sun TCF Star Rack Back View 1-11

FIGURE 1-7 Disk Array Front View 1-13

FIGURE 1-8 Disk Array Back View 1-13

FIGURE 1-9 File Server/Compute Engine Front View 1-15

FIGURE 1-10 File Server/Compute Engine Front View With Front Doors Open 1-15

FIGURE 1-11 File Server Back View 1-16

FIGURE 1-12 Compute Engine Back View 1-16

FIGURE 1-13 C3524 Ethernet Switch Front Panel 1-17

FIGURE 1-14 C3524 Ethernet Switch Back Panel 1-18

FIGURE 1-15 C3508 Ethernet Switch Front Panel 1-19

FIGURE 1-16 C3508 Ethernet Switch Back Panel 1-19

FIGURE 1-17 Access Server Front Panel 1-20

FIGURE 1-18 Access Server Back Panel 1-20

FIGURE 3-1 Rack Leveling Pads 3-3

FIGURE 3-2 Stabilizer Legs 3-4
FIGURE 3-3 Installing the Right Stabilizer Leg 3-5
FIGURE 3-4 Adjusting the Leveling Pads on the Stabilizer Leg 3-6
FIGURE 3-5 Removing the Mounting Screws 3-7
FIGURE 3-6 Attaching the Floor Brackets 3-7
FIGURE 3-7 Location of Key Switch on Bottom Front Panel 3-9
FIGURE 3-8 Opening the Back Door of the Rack 3-10
FIGURE 3-9 Power Sequencer Control Panel 3-11
FIGURE 3-10 Connecting the Power Cord 3-12
FIGURE 3-11 NEMA L6-30P for 200-240V North American Operation 3-13
FIGURE 3-12 IEC 309 Connector for 200–240V International Operation 3-13
FIGURE 3-13 Connecting the Ground Strap to the Front Power Sequencer 3-15
FIGURE 4-1 Threading Screws Into the Rack 4-3
FIGURE 4-2 Aligning the Chassis and Baseplate With the Side Rails 4-5
FIGURE 4-3 Installing Screws to Secure the Baseplate to the Side Brackets 4-6
FIGURE 4-4 AC Power Connector 4-7
FIGURE 4-5 Power Cable Routing 4-8
FIGURE 4-6 Main and Side Baffles 4-10
FIGURE 4-7 Removing the Side Baffle 4-11
FIGURE 4-8 Main Baffle 4-12
FIGURE 4-9 Side Baffle 4-13
FIGURE 4-10 Installing the Side Baffle 4-15
FIGURE 5-1 Example of a Sun TCF Small Farm Configuration With One Base Rack 5-3
FIGURE 5-2 Small Farm Configuration Schematic Drawing 5-6
FIGURE 5-3 Disk Array Ports 5-7
FIGURE 5-4 Disk Array 1-to-File Server Cabling 5-8
FIGURE 5-5 Cabling the File Server for the Small Farm Configuration 5-10
FIGURE 5-6 Cabling the Base Rack Compute Engine for the Small Farm Configuration 5-11

FIGURE 5-7 Cabling the Expansion Rack Compute Engine for the Small Farm Configuration 5-12

FIGURE 5-8 Cabling the C3524 Ethernet Switch for the Small Farm Configuration 5-13

FIGURE 5-9 Cabling Access Server 1 for the Small Farm Configuration 5-15

FIGURE 5-10 Example 1 of a Sun TCF Medium Farm Configuration With One Base Rack 5-17

FIGURE 5-11 Medium Farm Configuration Example 1 (Sheet 1 of 2) 5-19

FIGURE 5-12 Medium Farm Configuration Example 1 (Sheet 2 of 2) 5-20

FIGURE 5-13 Cabling the Expansion Rack 2 Compute Engine for the Medium Farm Configuration Example 1 5-22

FIGURE 5-14 Cabling the C3524 Ethernet Switch for the Medium Farm Configuration Example 1 5-24

FIGURE 5-15 Cabling the Access Server 2 for the Medium Farm Configuration Example 1 5-26

FIGURE 5-16 Example 2 of a Sun TCF Medium Farm Configuration With Two Base Racks 5-28

FIGURE 5-17 Medium Farm Configuration Example 2 (Sheet 1 of 2) 5-29

FIGURE 5-18 Medium Farm Configuration Example 2 (Sheet 2 of 2) 5-30

FIGURE 5-19 Cabling the Base Rack 1 C3524 Ethernet Switch for the Medium Farm Configuration Example 2 5-32

FIGURE 5-20 Cabling Base Rack 2 C3524 Ethernet Switch for the Medium Farm Configuration Example 2 5-33

FIGURE 5-21 Example of a Sun TCF Large Farm Configuration With a Star Rack and Three Base Racks 5-35

FIGURE 5-22 Large Farm Configuration 5-38

FIGURE 5-23 Disk Array Ports 5-39

FIGURE 5-24 Cabling Disk Arrays 1 and 2 to the File Server 5-40

FIGURE 5-25 Disk Array 1-to-Disk Array 2 Cabling 5-41

FIGURE 5-26 Cabling the Star Rack C3524 Ethernet Switch for the Large Farm Configuration 5-43

FIGURE 5-27 Cabling the C3508 Ethernet Switch 5-46

FIGURE 6-1 Location of Key Switch on Bottom Front Panel 6-3

FIGURE 6-2 AC Power Sequencer Control Panel 6-4

FIGURE 6-3 Front Sequencer Status Lights 6-4

FIGURE 6-4 Powering On the Disk Array 6-7

FIGURE 6-5 Powering On the File Server or Compute Engine 6-9

FIGURE 6-6 Setting the Locked Position 6-9

FIGURE 6-7 Setting the Standby Position 6-10

FIGURE 7-1 Installing a System Console 7-2

FIGURE 9-1 Removing and Replacing the Access Server 9-3

FIGURE 9-2 Removing and Replacing the Access Server Rear Bracket 9-4

FIGURE 9-3 Installing the Access Server Front Bracket 9-5

FIGURE 9-4 Mounting Location for the Access Servers 9-6

FIGURE 9-5 Removing and Replacing the C3524 Ethernet Switch 9-9

FIGURE 9-6 Removing and Replacing the C3524 Ethernet Rear Bracket 9-10

FIGURE 9-7 Installing the Ethernet Switch Front Bracket 9-11

FIGURE 9-8 Mounting Location for the Ethernet Switches 9-12

FIGURE 9-9 Installing the 1000BASE-X GBIC Module 9-13

FIGURE 9-10 Loosening the Captive Screws From the Left and Right Vertical Rails 9-16

FIGURE 9-11 Locating the Flat Spring Catches 9-17

FIGURE 9-12 Pushing in the Runner 9-19

FIGURE 9-13 Inserting the File Server or Compute Engine Glides Into the Inner Slides of the Rack Glides 9-20

FIGURE 9-14 Pressing the Flat Spring Catches 9-21

FIGURE 9-15 Securing the File Server or Compute Engine to the Left and Right Vertical Rails 9-22

FIGURE 9-16 Loosening the Captive Screws Securing the File Server or Compute Engine to the Rails 9-24

FIGURE 9-17 Sliding the File Server or Compute Engine Chassis out of the Rack 9-25

FIGURE 9-18 Removing and Replacing the Host Adapter Fiber Optic Cable 9-28

FIGURE 9-19 Removing and Replacing the Host Adapter Dust Covers 9-28

FIGURE 9-20 Removing and Replacing the GigabitEthernet Adapter Fiber Optic Cable 9-31

FIGURE 9-21 Removing and Replacing the GigabitEthernet Adapter Dust Covers 9-31

FIGURE 9-22 Tightening the Captive Screws Securing the File Server or Compute Engine to the Rails 9-34

FIGURE 9-23 Removing the Screws Securing the Baseplate to the Side Brackets 9-37

FIGURE 9-24 Removing the Chassis and Baseplate From the Rack 9-38

FIGURE 10-1 Removing and Replacing the Key Switch 10-2
FIGURE 10-2 Removing and Replacing the Key Switch 10-3
FIGURE 10-3 Removing and Replacing the AC Input Cable 10-5
FIGURE 10-4 Removing and Replacing the Power Sequencer 10-6
FIGURE 10-5 Removing and Replacing the Side Panels 10-8

Tables

TABLE 1-1 Base Rack Equipment 1-3

TABLE 1-2 Expansion Rack Equipment 1-6

TABLE 1-3 Star Rack Equipment 1-9

TABLE 1-4 Supported I/O Devices 1-21

TABLE 2-1 Operating Environment 2-3

TABLE 2-2 Sun TCF Rack Air Conditioning Tonnage 2-4

TABLE 2-3 Clearance and Service Access 2-5

TABLE 5-1 Point-to-Point Connections Within the Base Rack 5-3

TABLE 5-2 Point-to-Point Connections Between the Base Rack and the Expansion Rack 5-4

TABLE 5-3 Point-to-Point Connections Between the Base Rack and Expansion Rack 2 5-17

TABLE 5-4 Point-to-Point Connections Between the Base Racks 5-28

TABLE 5-5 Point-to-Point Connections Within the Star Rack 5-36

TABLE 5-6 Point-to-Point Connections Between the Star Rack and Three Small Farm Base Racks 5-37

TABLE 8-1 Sun Management Center 2.1 Software Features 8-2

TABLE A-1 Base Rack Physical Specifications A-1

TABLE A-2 Expansion Rack With 2-CPU Compute Engines Physical Specifications A-2

TABLE A-3 Expansion Rack With 4-CPU Compute Engines Physical Specifications A-2

TABLE A-4 Star Rack Physical Specifications A-2

TABLE A-5 Product Specifications A-3

TABLE A-6 Sun TCF Electrical Specifications A-4

TABLE A-7 Sun TCF Environmental Requirements A-5
TABLE A-8 Sun TCF Rack Air Conditioning Tonnage A-5
TABLE A-9 Sun TCF Clearance and Service Access A-6
TABLE B-1 Sun TCF Replaceable Parts B-1
TABLE B-2 Sun TCF Devices With Replaceable Parts B-2

Preface

The *Sun Technical Compute Farm Installation and Service Manual* provides procedures for unpacking and installing the Sun™ Technical Compute Farm (Sun TCF) system. It also includes procedures to install, remove, and replace the cabinet-mounted devices and to remove and replace the expansion cabinet field replaceable units (FRUs). Only a qualified service provider should perform the tasks in this manual. This book is part of the Sun TCF software media kit shipped with the Sun TCF product for final assembly and use.

In most cases, the Sun TCF hardware will be assembled and installed before shipment to the customer site. At the customer site, Sun Enterprise Services may unpack and install the complete Sun TCF for the customer. This document is intended to support these activities.

How This Book Is Organized

Chapter 1 provides the product overview.

Chapter 2 describes site preparation.

Chapter 3 describes unpacking and installing the rack.

Chapter 4 provides procedures for installing a second disk array and repositioning the airflow baffle.

Chapter 5 provides procedures for cabling the available Sun TCF configurations and for cabling the Sun TCF devices.

Chapter 6 provides procedures to power on and power off the expansion cabinet, and power on and power off the cabinet-mounted devices.

Chapter 7 provides procedures for adding a system console and initially configuring the access server.

Chapter 8 provides fault isolation and troubleshooting.

Chapter 9 provides procedures to remove, replace, and cable a specific rack device.

Chapter 10 provides procedures to remove and replace Sun StorEdge™ expansion cabinet (rack) subassemblies (FRUs).

Appendix A lists the various hardware devices, the supporting documents, and the document part number for acquiring specifications for the particular device.

Appendix B provides a table that lists the replaceable components for the Sun TCF by part number and a second table that lists the Sun TCF devices with replaceable components. The listed documents associated with each device contain FRU part numbers for the device.

Using UNIX Commands

This document may not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- *Solaris Handbook for Sun Peripherals* (*If you are incorporating Solaris software commands in your document, delete this sentence.*)
- AnswerBook™ online documentation for the Solaris™ software environment
- Other software documentation that you received with your system

Typographic Conventions

Typeface	Meaning	Examples
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
`AaBbCc123`	What you type, when contrasted with on-screen computer output	`% su` `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this.
	Command-line variable; replace with a real name or value	To delete a file, type `rm` *filename*.

Shell Prompts

Shell	Prompt
C shell	*machine_name*%
C shell superuser	*machine_name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Related Documentation

Application	Title	Part Number
Configuration	*Sun StorEdge™ A5000 Configuration Guide*	805-0264
Installation	*Sun StorEdge PCI FC-100 Host Adapter Installation Manual*	805-3682
Installation	*Sun StorEdge Expansion Cabinet Airflow Baffle Installation Guide*	806-0274
Installation	*Sun StorEdge PCI FC-100 Host Adapter Installation Manual*	805-3682
Installation guide	*Cisco AS2509-RJ and AS2511-RJ Access Server Hardware Installation Guide*	78-3333
Installation guide	*Catalyst 3500 Series XL Installation Guide*	*78-6456*
Installation and service	*Sun StorEdge Expansion Cabinet Installation and Service Manual*	805-3067
Installation and service	*Sun StorEdge A5000 Installation and Service Manual*	802-7573
Installation and user's guide	*Sun GigabitEthernet/P 2.0 Adapter Installation and User's Guide*	805-2785
Owner's guide	*Sun Enterprise™ 420R Server Owner's Guide*	806-1078
Reference guide	*Sun Technical Compute Farm Documentation Roadmap*	806-1002
Reference guide	*Sun Microsystems Data Center Site Planning Guide*	805-5863
	`http://docs.sun.com:80/ab2/coll.506.1/DATACENTERSITE/@Ab2TocView`	
Reference guide	`http://docs.sun.com:80/ab2/coll.242.1/@Ab2CollView`	
Service manual	*Sun Enterprise™ 420R Server Service Manual*	806-1080
Setup and rackmounting guide	*Sun Enterprise 420R Server Setup and Rackmounting Guide*	806-1086

Application	Title	Part Number
Software guide	*Sun Technical Compute Farm Product Overview and Software Guide*	806-1001
Software guide	*Solaris Naming Administration Guide*	806-1391
User's guide	*Sun Enterprise 6x00/5x00/4x00/3x00 Systems Dynamic Reconfiguration User's Guide*	805-4455
User's guide	*Sun Management Center™ 2.1 Software User's Guide*	806-3166

Accessing Sun Documentation Online

The `docs.sun.com`sm web site enables you to access Sun technical documentation on the Web. You can browse the `docs.sun.com` archive or search for a specific book title or subject at:

```
http://docs.sun.com
```

Ordering Sun Documentation

Fatbrain.com, an Internet professional bookstore, stocks select product documentation from Sun Microsystems, Inc.

For a list of documents and how to order them, visit the Sun Documentation Center on Fatbrain.com at:

```
http://www1.fatbrain.com/documentation/sun
```

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. You can email your comments to Sun at:

```
docfeedback@sun.com
```

Please include the part number of your document 806-0994 in the subject line of your email.

CHAPTER 1

Sun Technical Compute Farm Overview

Sun™ Technical Compute Farm (Sun TCF) is a high performance clustering solution that allows technical workgroups to more efficiently allocate and share computing resources. The Sun TCF hardware is a collection of independent, rackmounted technical compute engines that are connected to a file server. Both the compute engines and the file server are Sun Enterprise™ 420Rs. The Sun TCF hardware also includes a series of disk arrays, and various networking components. The Sun TCF software makes the hardware appear to the end user and to applications as one computational entity.

Sun Enterprise Services personnel install the Sun TCF hardware at the customer site. The customer's system administrator is then responsible for configuring the Solaris operating system and other software components.

This chapter contains the following topics:

- Section 1.1 "Typical Sun TCF System Applications" on page 1-1
- Section 1.2 "Hardware Description" on page 1-2
- Section 1.3 "System Devices" on page 1-12
- Section 1.4 "I/O Devices" on page 1-21

1.1 Typical Sun TCF System Applications

The following list describes some typical uses for a Sun TCF system:

- Resource sharing for compute-intensive applications such as EDA (electronic design automation), engineering simulations, software development, and financial management
- Cost-effectively deploying more compute resources to end users
- Simultaneously executing many compute-intensive tasks
- Minimizing effort and risk of expanding existing computing resources

- Making development processes faster and more powerful by spawning multiple jobs simultaneously
- Maximizing CPU utilization

Through the use of workload management tools, the Sun TCF system allows for the distribution of compute-intensive jobs from individual users to the compute engines in the Sun TCF configuration, thus making more efficient use of local user machines and relieving network traffic. Tools that support Sun TCF include Solaris™ Resource Manager™, Platform Computing's Load Sharing Facility (LSF), Gridware's Codine, or MRJ Software's PBS.

Note – For best results, add a workload management tool to the Sun TCF configuration. See the *Sun Technical Compute Farm Product Overview and Software Guide* for specifics.

1.2 Hardware Description

The Sun TCF integrates a group of hardware components into a single, powerful computing entity. The Sun TCF software provides the ability to configure, monitor, and analyze computing services such as load balancing the processor sharing so that computing resources are maximized.

The Sun TCF uses Sun products and products from other hardware and software providers to capitalize on high network bandwidth and efficient CPU utilization. All of the hardware is rackmounted in 19-inch-wide Sun StorEdge™ expansion cabinets (racks).

Note – The ratio of compute engines to file servers depends on the type of applications and the system workload.

Sun TCF systems may use three different rack configurations:

- Base rack
- Expansion rack
- Star rack

1.2.1 Base Rack

The base rack contains network equipment, a file server, compute engines, and a disk array. Space for a second disk array is provided. The base rack supports up to two expansion racks.

TABLE 1-1 lists the rackmounted equipment. FIGURE 1-1 and FIGURE 1-2 show the front and back views of the base rack, respectively.

TABLE 1-1 Base Rack Equipment

Common name	Official Nomenclature	Quantity	Description
Disk array	Sun StorEdge A5200 disk array	1[1]	Designated as *disk array 1*. Provides high-availability mass storage.
File server	Sun Enterprise 420R	1	Provides overall control and direction of the Sun TCF data traffic throughput.
Compute engine	Sun Enterprise 420R	4	Designated as *compute engine 1* through *compute engine 4*. Receives control and direction from the file server to provide data transmissions between the file server and the end-user workstation.
C3524 Ethernet switch	Cisco C3524-XL-EN Ethernet switch	1	Provides Gigabit Ethernet and autosensing 10BASE-T or 100BASE-TX connections in individual switches and in clustered configurations.
Access server	Cisco AS2511-RJ access server	2	Designated as *access server 1* and *access server 2*. Provides connection of asynchronous serial devices to local area networks (LANs) and wide area networks (WANs).

1. As an option, a second disk array, designated *disk array 2*, may be installed into the base rack.

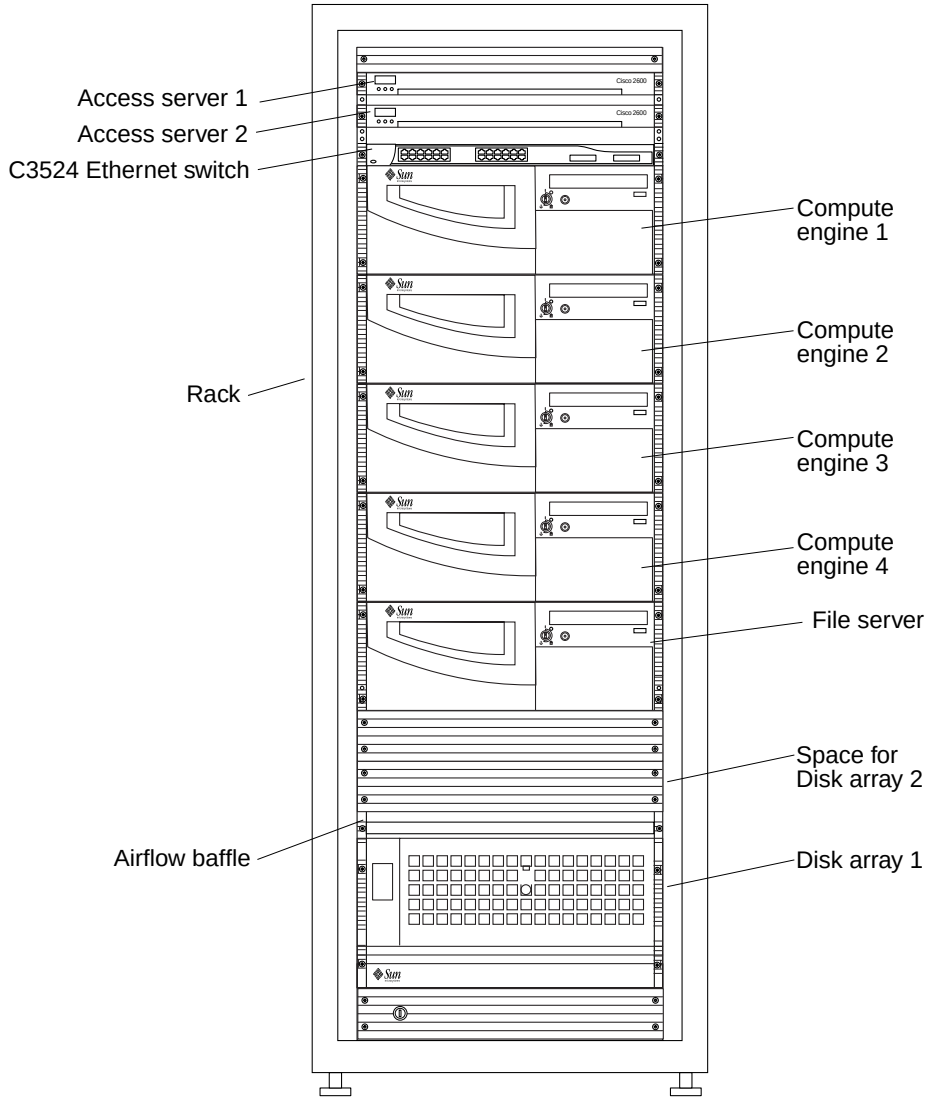


FIGURE 1-1 Sun TCF Base Rack Front View

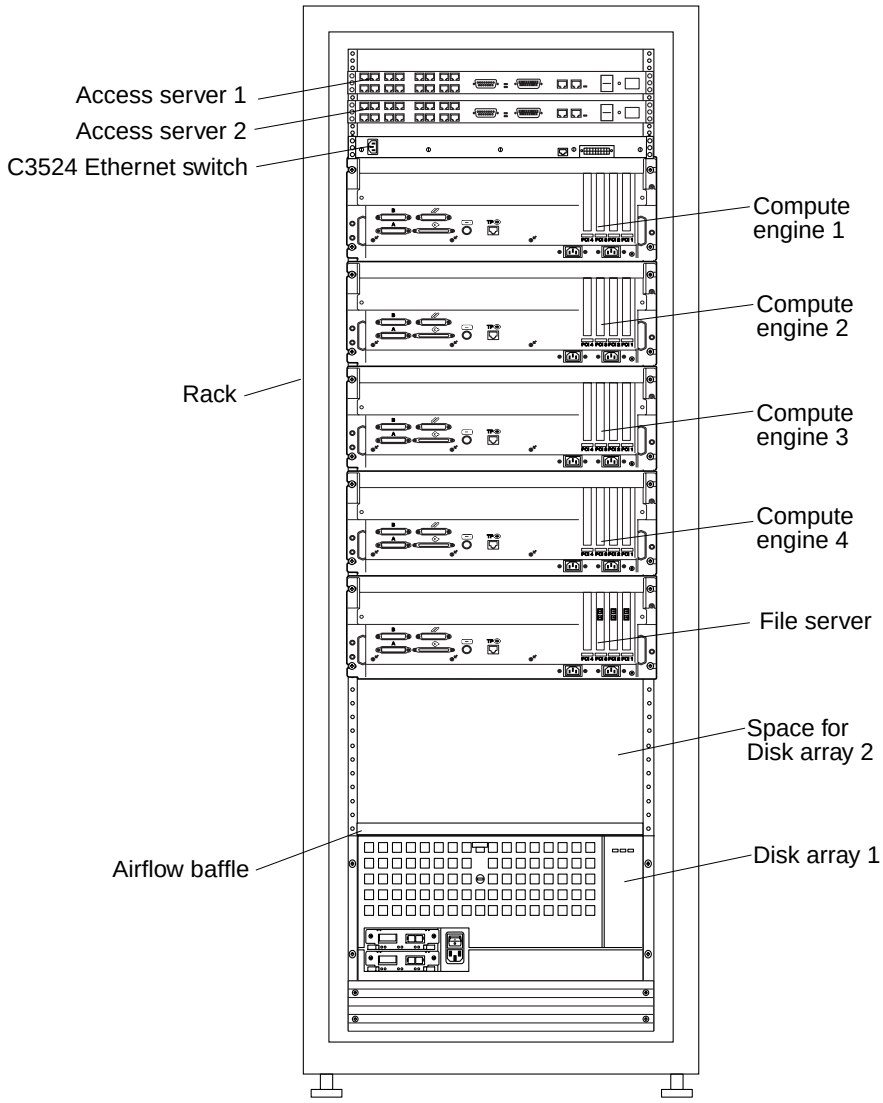


FIGURE 1-2 Sun TCF Base Rack Back View

1.2.2 Expansion Rack

The expansion rack contains nine compute engines. The expansion rack is configured for either 36 CPUs (4 CPUs per compute engine) or 18 CPUs (2 CPUs per compute engine).

TABLE 1-2 lists the expansion rack equipment. FIGURE 1-3 and FIGURE 1-4 show the front and back views of the expansion rack, respectively.

TABLE 1-2 Expansion Rack Equipment

Common name	Official Nomenclature	Quantity	Description
Compute engine	Sun Enterprise 420R	9	Designated as *compute engine 1* through *compute engine 9*. Receives control and direction from the file server to provide data transmissions between the file server and the end-user workstation.

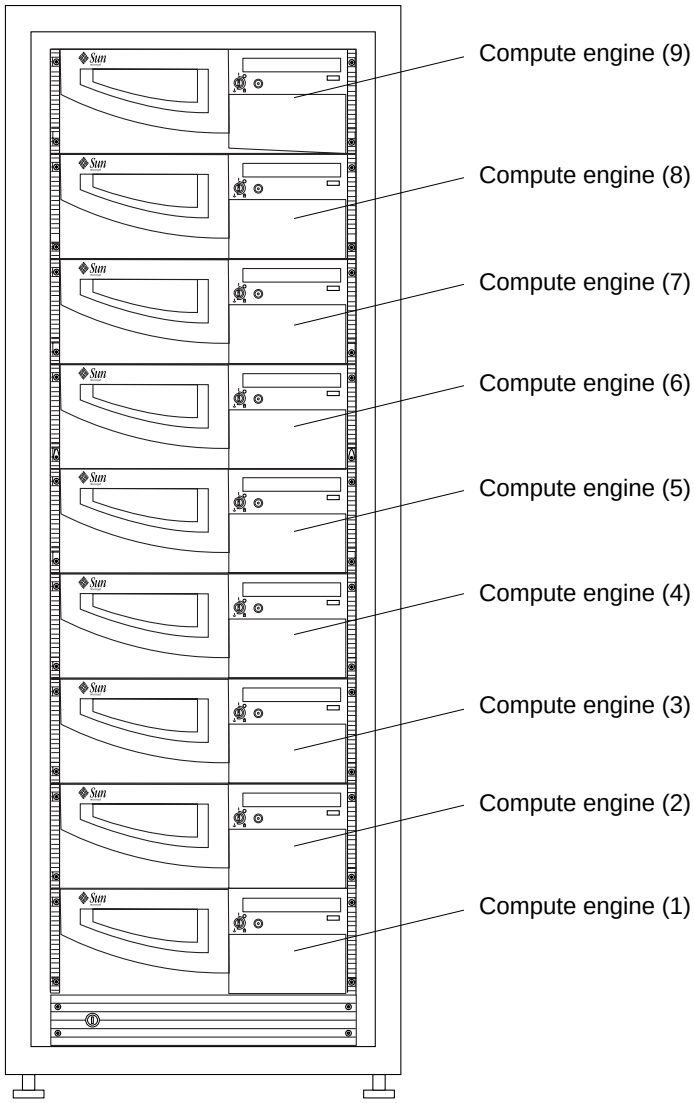


FIGURE 1-3 Sun TCF Expansion Rack Front View

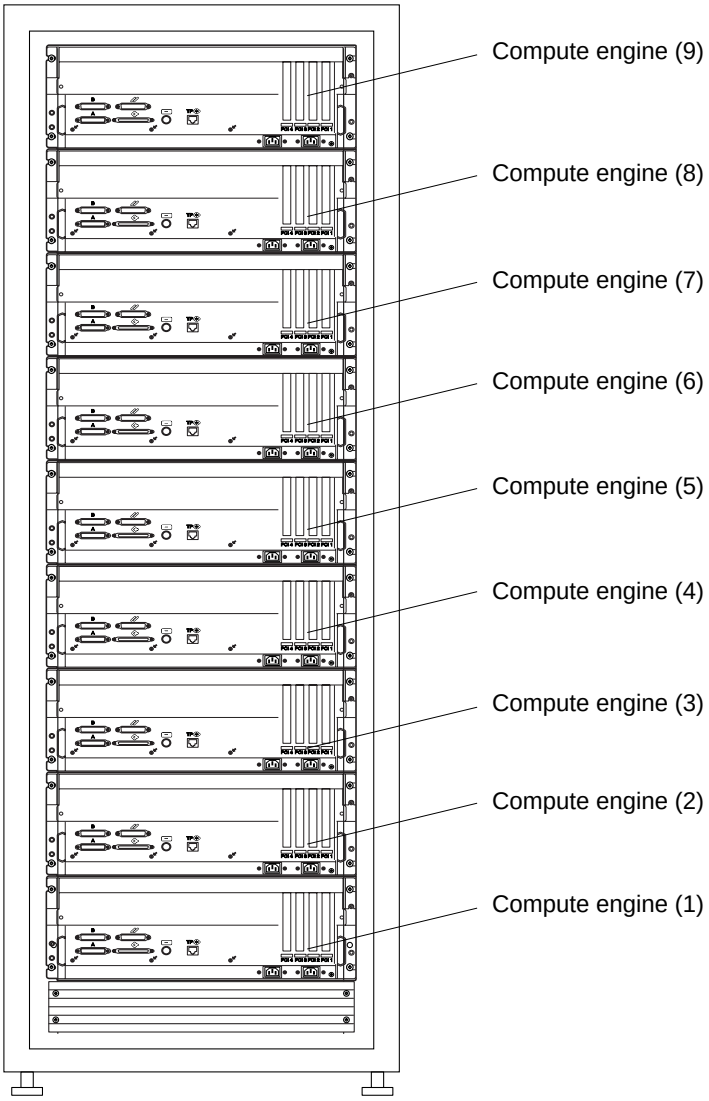


FIGURE 1-4 Sun TCF Expansion Rack Back View

1.2.3 Star Rack

Like the base rack (refer to Section 1.2.1 “Base Rack” on page 1-3), the star rack contains network equipment, a file server, and compute engines. Additionally, the star rack contains an additional Ethernet switch and disk array.

TABLE 1-3 lists the star rack equipment. FIGURE 1-1 and FIGURE 1-2 show the front and back views of the star rack, respectively.

TABLE 1-3 Star Rack Equipment

Common name	Official Nomenclature	Quantity	Description
Disk array	Sun StorEdge A5200 disk array	2	Designated as *disk array 1* and *disk array 2*. Provides high-availability mass storage.
Compute engine	Sun Enterprise 420R	4	Designated as *compute engine 1* through *compute engine 4*. Receives control and direction from the file server to provide data transmissions between the file server and the end-user workstation.
File server	Sun Enterprise 420R	1	Provides overall control and direction of the Sun TCF data traffic throughput
C3524 Ethernet switch	Cisco C3524-XL-EN Ethernet switch	1	Provides Gigabit Ethernet and autosensing 10BASE-T or 100BASE-TX connections in individual switches and in clustered configurations.
Access server	Cisco AS2511-RJ access server	2	Designated as *access server 1* and *access server 2*. Provides connection of asynchronous serial devices to local area networks (LANs) and wide area networks (WANs).
C3508 Ethernet switch	Cisco C3508-XL-EN Ethernet switch	1	Provides Gigabit Ethernet and autosensing 10BASE-T or 100BASE-TX connections in individual switches and in clustered configurations.

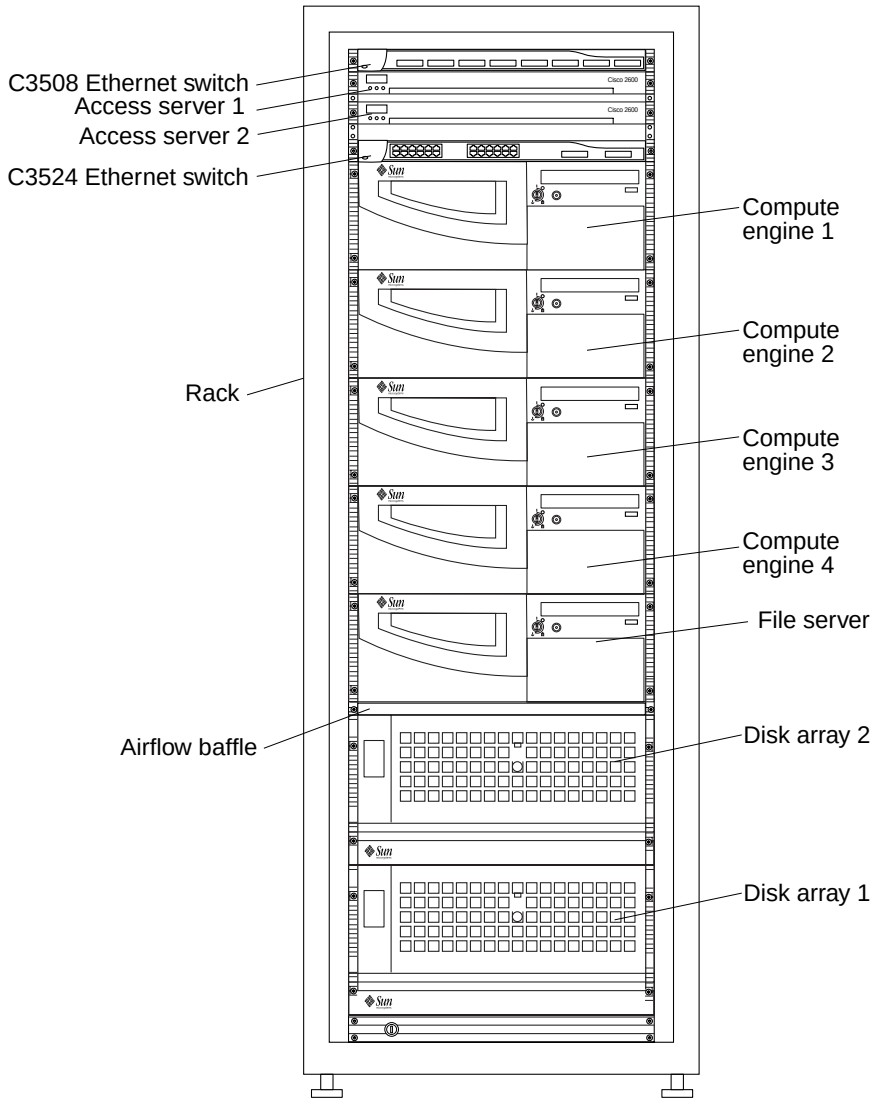


FIGURE 1-5 Sun TCF Star Rack Front View

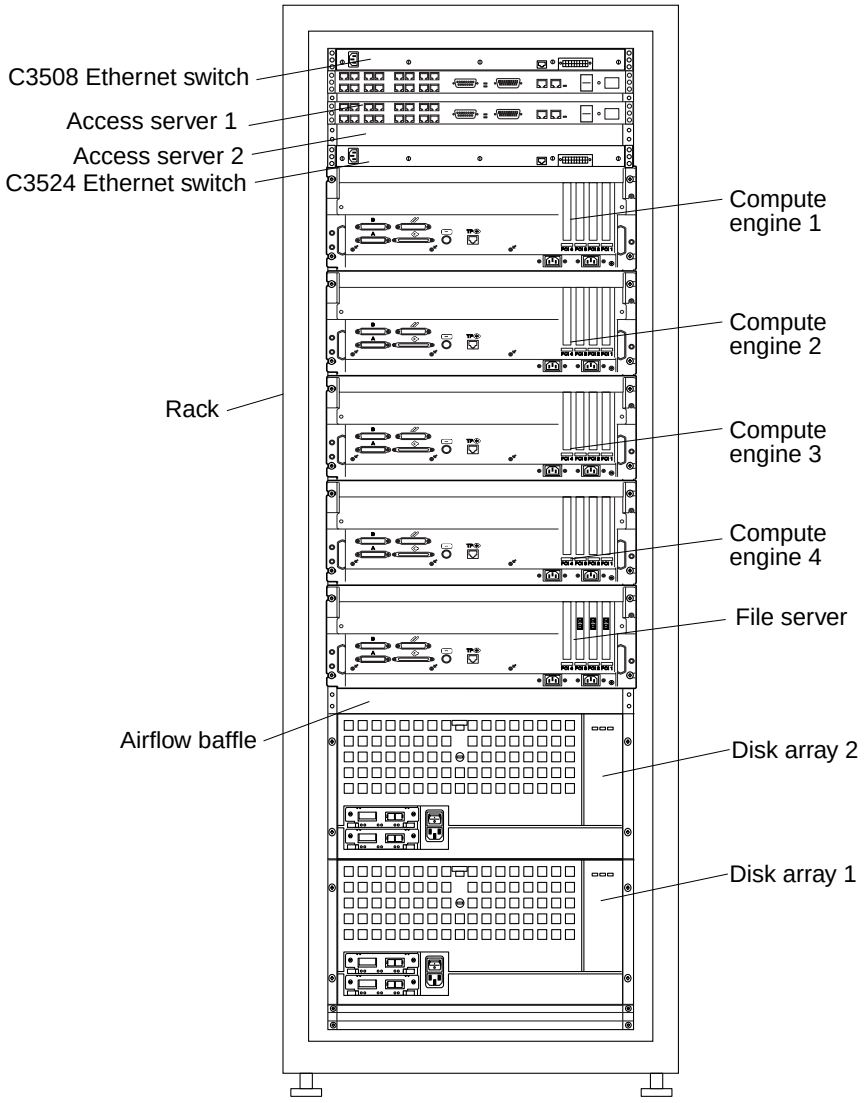


FIGURE 1-6 Sun TCF Star Rack Back View

1.3 System Devices

System devices include:

- Section 1.3.1 “Rack” on page 1-12
- Section 1.3.5 “Access Server” on page 1-20
- Section 1.3.4 “Cisco C3524 and C3508 Ethernet Switches” on page 1-17
- Section 1.3.3 “File Server and Compute Engine” on page 1-13
- Section 1.3.2 “Disk Array” on page 1-12

1.3.1 Rack

The Sun StorEdge expansion cabinet (rack) includes:

- Two power sequencer assemblies
- Four floor mounting brackets
- Two stabilizer legs
- Associated mounting hardware

The floor mounting brackets enable the rack to be bolted to the floor. If the floor mounting brackets are not to be installed, then the stabilizer legs must be installed. The stabilizer legs are extended to prevent the rack from tipping over when devices are installed, removed, or serviced.

For specific technical information about the rack, refer to the *Sun StorEdge Expansion Cabinet Installation and Service Manual*.

1.3.2 Disk Array

The Sun StorEdge A5200 disk array is a high-availability mass storage subsystem capable of supporting twenty-two 1-inch disk drives (22-slot). Communication to other devices is through one or two interface boards, each with up to two gigabit interface converters (GBICs). A front panel module (FPM) enables the configuration of the enclosure to be displayed and modified. Active components in the disk array are redundant and can be replaced while the disk array is operating.

FIGURE 1-7 and FIGURE 1-8 show the front and back views of the disk array, respectively. For specific technical information about the disk array, refer to the *Sun StorEdge A5000 Installation and Service Manual*.

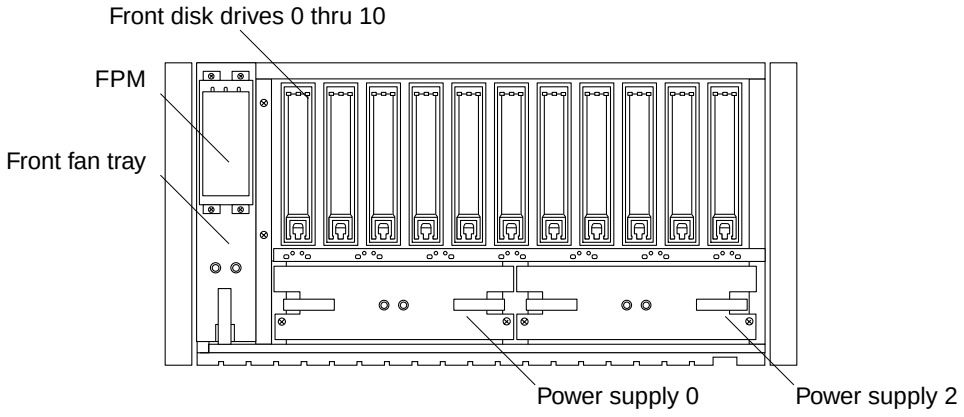


FIGURE 1-7 Disk Array Front View

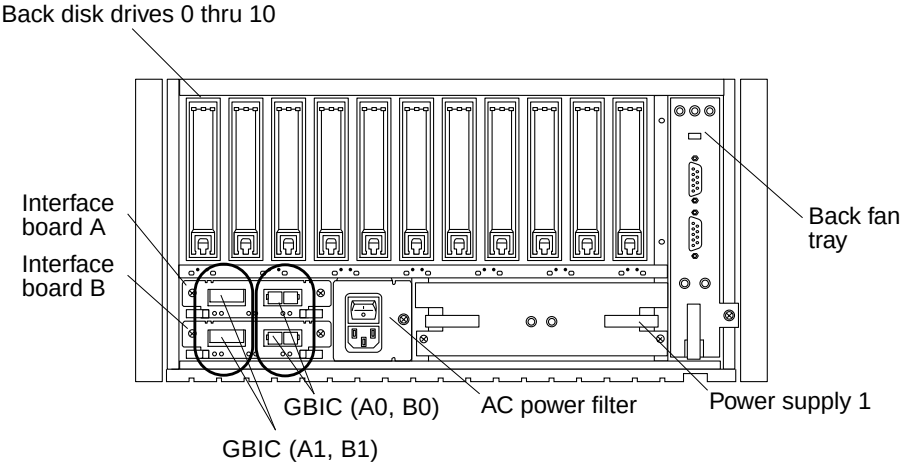


FIGURE 1-8 Disk Array Back View

1.3.3 File Server and Compute Engine

The Sun Enterprise 420R is used as the Sun TCF file server and compute engine. The file server provides overall control and direction of the Sun TCF data traffic throughput. The compute engine receives control and direction from the file server to provide data transmissions between the file server and the end-user workstation. The file server is preinstalled with the Solaris 2.6 operating system.

The Sun Enterprise 420R file server and compute engines use a high-performance, shared memory, symmetric-multiprocessing architecture, designed around Sun's high-speed Ultra™ Port Architecture (UPA) cross-bar system interconnect and Sun's UltraSPARC™-II processor.

The reliability, availability, and serviceability of the file server and compute engine are enhanced by features that include:

- Memory and data path error correction code (ECC)
- Parity checking on all address buses
- Front panel status indicator lights
- Hot-pluggable internal disk drives with easy front access
- Support for RAID 0, 1, 0 + 1, and 5 implementations
- Power system monitoring and fault protection
- Power supply redundancy
- Hot-swap power supplies with easy front panel access
- Four levels of system diagnostics
- Easy front, top, or back access to all internal replaceable components

Each unit uses the Sun Enterprise 420R server rackmounting kit (refer to the *Sun Enterprise 420R Server Setup and Rackmounting Guide)* for installation into the rack.

Unlike the compute engine, the file server is configured with two additional circuit card types:

- One GigabitEthernet/P 2.0 adapter (GigabitEthernet adapter) card
- Two StorEdge PCI FC-100 host adapter (host adapter) fibre channel cards

The GigabitEthernet adapter card is installed in PCI slot 1 of the file server and the two host adapter Fibre Channel cards are installed in PCI slots 2 and 3, respectively. PCI slot 1 is a 66-MHz, 32- or 64-bit PCI bus slot and PCI 2 and 3 are 33-MHz, 32- or 64-bit PCI bus slots. These additional circuit cards allow the file server to control subnet communications between the disk array(s) and the compute engines through fiber-optic cables and supported network equipment. In addition to providing control to the four compute engines located in the base rack, a single file server can support up to 18 additional compute engines that are rackmounted in additional expansion racks.

FIGURE 1-9, FIGURE 1-10, and FIGURE 1-11 show the front view of the file server and the compute engine with the front doors closed and opened, respectively. FIGURE 1-11 illustrates the back view of the file server and FIGURE 1-12 illustrates the back view of the compute engine. For specific technical information about the file server or the compute engine, refer to the *Sun Enterprise 420R Server Service Manual.*

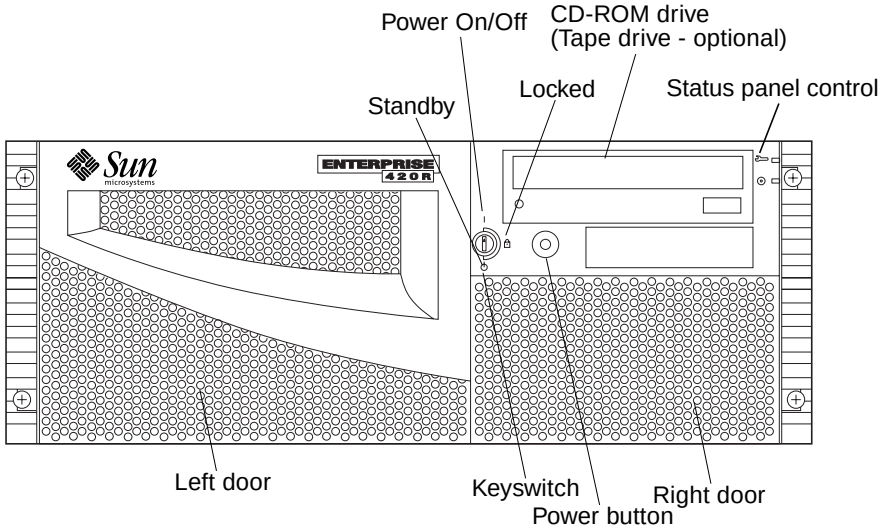


FIGURE 1-9 File Server / Compute Engine Front View

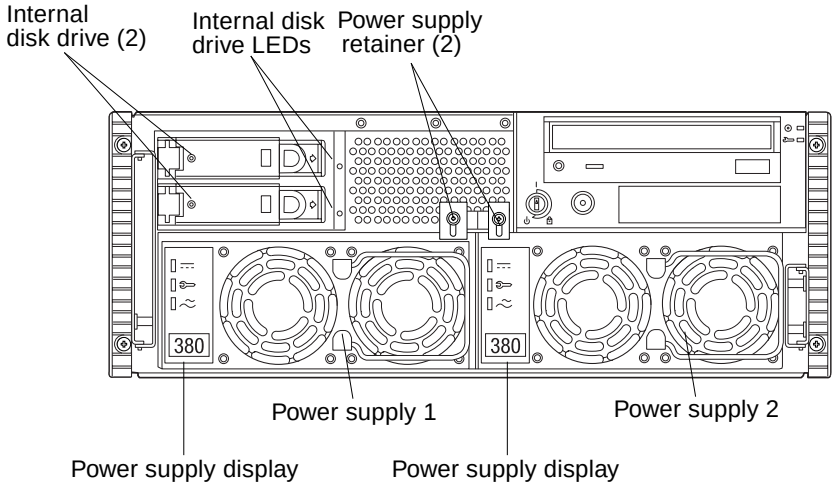


FIGURE 1-10 File Server / Compute Engine Front View With Front Doors Open

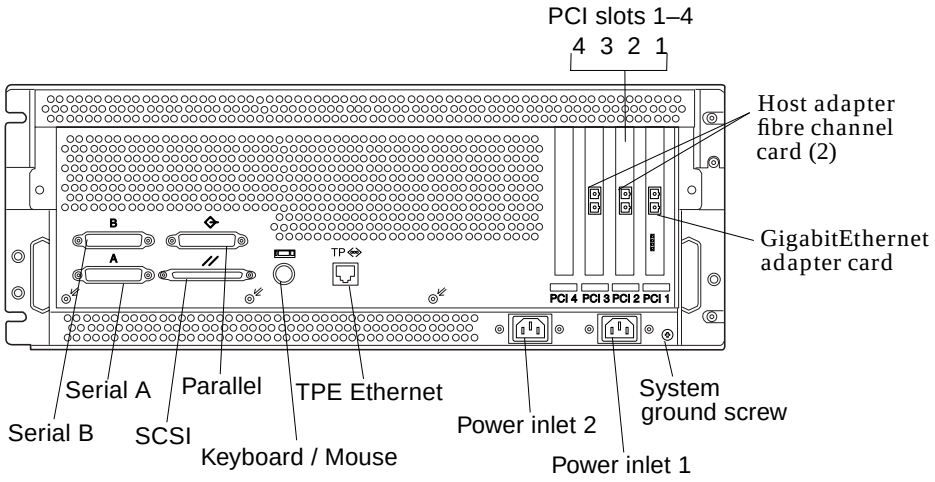


FIGURE 1-11 File Server Back View

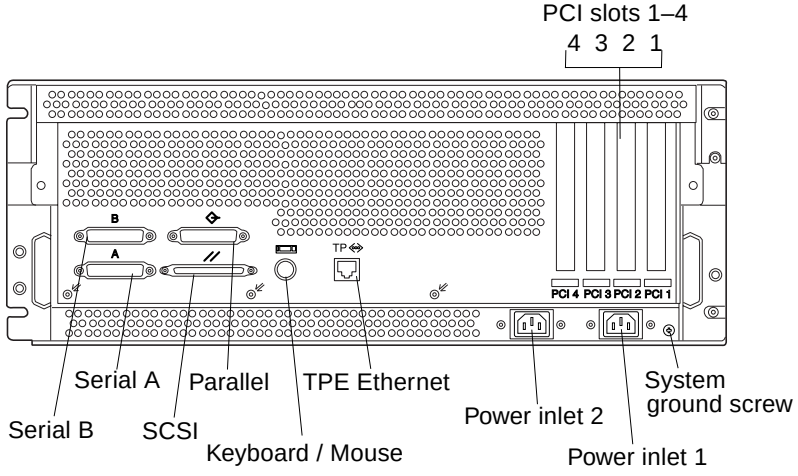


FIGURE 1-12 Compute Engine Back View

1.3.4 Cisco C3524 and C3508 Ethernet Switches

The Cisco C3524 and C3508 Ethernet switches supply Gigabit Ethernet and autosensing 10BASE-T or 100BASE-TX connections in individual switches and in clustered configurations. These switches are used as backbone switches aggregating 10/100 and Gigabit Ethernet traffic from other switches and hubs or in mixed configurations connecting hubs, switches, servers, and desktop computers or servers.

1.3.4.1 C3524 Ethernet Switch

The C3524 Ethernet switch delivers premium performance, manageability, and flexibility. The Ethernet switch has 24 10/100 ports and two gigabit interface converter (GBIC)-based gigabit Ethernet ports.The C3524 Ethernet switch includes the following hardware features:

- 24-port 10/100BASE-T Fast Ethernet autosensing and autoconfiguring fixed ports
- Optional redundant, external power supply that is online swappable
- Two 802.3z Gigabit Ethernet ports with modular GBIC interfaces. GBIC ports can be independently configured with the following modules
  - 1000BASE-SX — Short wavelength (850 nanometers) multimode fiber
  - 1000BASE-LX/LH — Long wavelength (1300 nanometers) single-mode fiber
  - GigaStack GBIC module
- Console management port
- 10BASE-T management port

The following figures illustrate the C3524 Ethernet switch.

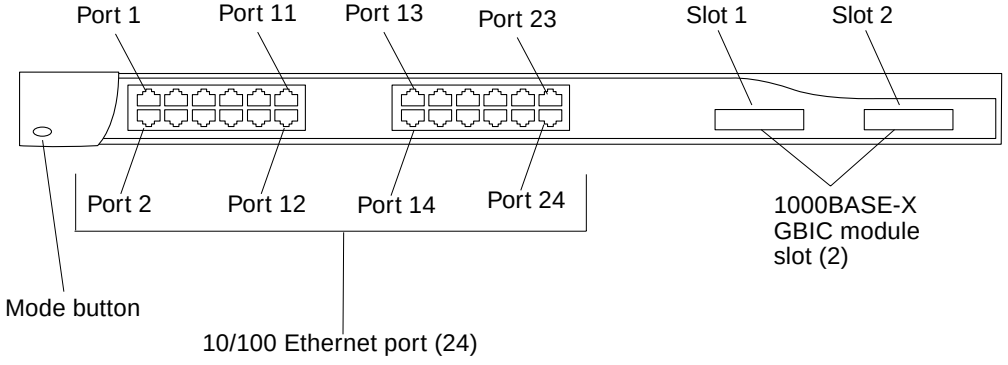


FIGURE 1-13 C3524 Ethernet Switch Front Panel

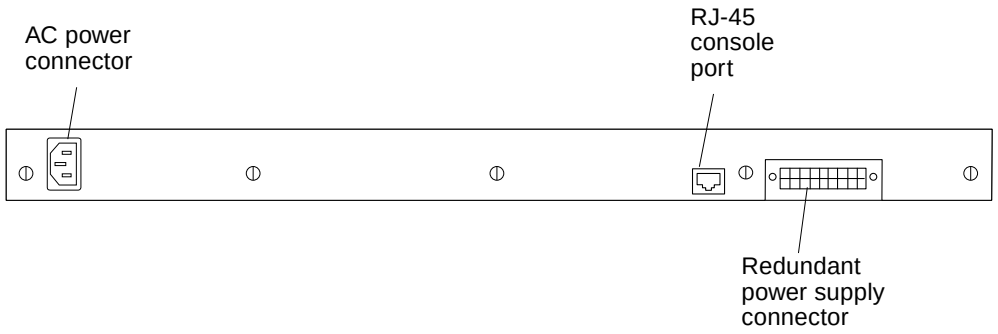


FIGURE 1-14 C3524 Ethernet Switch Back Panel

1.3.4.2 C3508 Ethernet Switch

The C3508 Ethernet switch features eight GBIC-based 1000BASE-X ports and a 10-Gbps switching fabric.

The C3508G Ethernet switch includes the following hardware features:

- Eight GBIC-based Gigabit Ethernet ports that deliver up to 5-Gbps aggregated forwarding bandwidth to a switch cluster.
- 10-Gbps switching fabric and 7.0 million packets-per-second forwarding rate.
- 4 MB shared-memory architecture ensures the highest possible throughput, with a design that eliminates head-of-line blocking, minimizes packet loss, and delivers better overall performance in environments with extensive multicast and broadcast traffic.
- Full-duplex operation on all ports delivers up to 2-Gbps on 1000BASE-X ports.
- Two priority forwarding queues on each Gigabit Ethernet port through IEEE 802.1p protocol enable prioritization of mission-critical and time-sensitive traffic from data, voice, and telephony applications.
- Bandwidth aggregation up to 4 Gbps through Gigabit EtherChannel technology enhances fault tolerance and offers higher-speed aggregated bandwidth between switches, and to routers and individual servers.
- A configurable network port supports unlimited MAC addresses for backbone connectivity.
- GigaStack GBIC delivers a low-cost hardware-based, independent stack bus with up to 1-Gbps forwarding bandwidth in a cascade configuration (up to nine Cisco Catalyst 3500 XL switches) or 2-Gbps forwarding rate in a point-to-point configuration.
- GBIC-based Gigabit Ethernet ports give customers a choice of:
  - 1000BASE-SX
  - 1000BASE-LX/LH
  - 1000BASE-ZX

- GigaStack GBICs to fit their connection needs
- Per-port broadcast storm control prevents faulty end stations from degrading overall systems performance with broadcast storms.

The following figures illustrate the C3508 Ethernet switch.

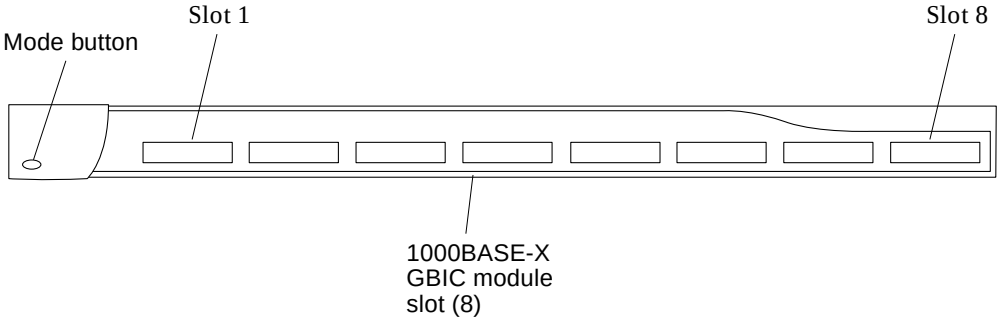


FIGURE 1-15 C3508 Ethernet Switch Front Panel

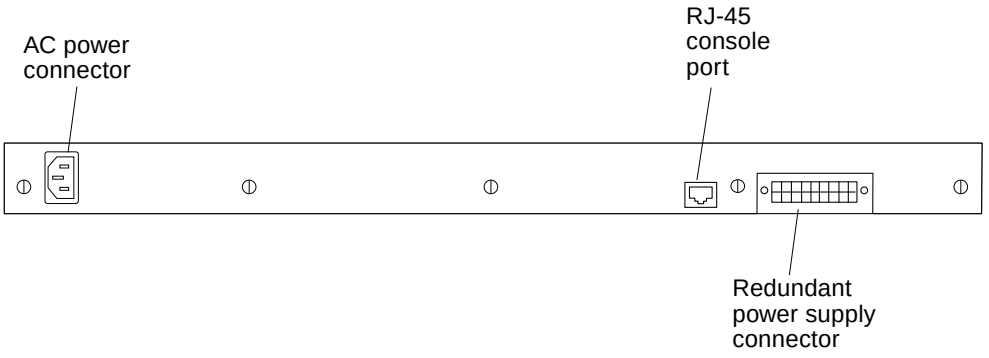


FIGURE 1-16 C3508 Ethernet Switch Back Panel

1.3.5 Access Server

The Cisco AS2511 access server combines the functions of a terminal server, protocol translator, and a router, and performs both synchronous and asynchronous routing of supported protocols.

The access server includes the following hardware features:

- 16 asynchronous serial ports for connection to modems, terminals, or other asynchronous devices
- One Ethernet attachment unit interface (AUI) port for connection to a LAN
- One asynchronous serial port for connection to a WAN
- DRAM for main memory and shared memory
- NVRAM for storing configuration information
- Flash memory for running the Cisco Internetwork Operating System (Cisco IOS) software
- LEDs to indicate the current operating condition of the access server
- One EIA / TIA-232 (RJ-45) console port for connecting to a console terminal
- One EIA / TIA-232 (RJ-45) auxiliary port for connecting to a terminal or modem

The following figures illustrate the front and back panels of the access server.

FIGURE 1-17 Access Server Front Panel

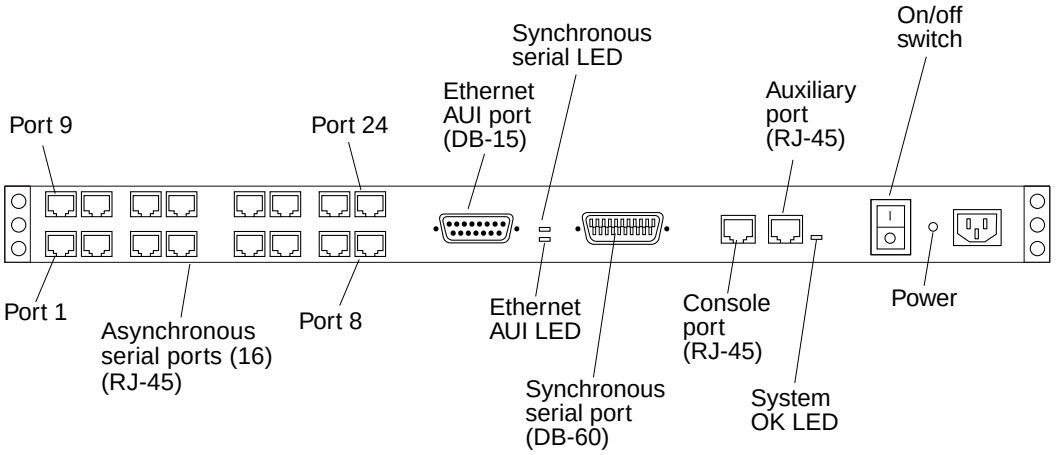


FIGURE 1-18 Access Server Back Panel

1.4 I/O Devices

The Sun TCF supports the I/O devices listed in the following table:

TABLE 1-4 Supported I/O Devices

I/O Devices	Description
17-inch (43-cm) entry-level monitor	1152 x 900 resolution, 76- or 66-Hz refresh rate, 100 dots per inch (dpi)
	1280 x 1024 resolution, 76- or 66-Hz refresh rate, 110 dpi
	960 x 680 resolution, 112-Hz refresh rate, 81 dpi
21-inch (51-cm) color monitor	1152 x 900 resolution, 76- or 66-Hz refresh rate, 84 dots per inch (dpi)
	1280 x 1024 resolution, 76- or 66-Hz refresh rate, 93 dpi
	960 x 680 resolution, 112-Hz refresh rate, 70 dpi
24-inch (61-cm) color monitor	1920 x 1200 resolution, 70-Hz refresh rate, 103 dpi
	1600 x 1000 resolution, 76- or 66-Hz refresh rate, 86 dpi
	1400 x 900 resolution, 76-Hz refresh rate, 77 dpi
	1280 x 800 resolution, 76-Hz refresh rate, 69 dpi
Keyboard	Sun Type-6
Mouse	Crossbow; optomechanical, 3-button

CHAPTER 2

Preparing for Assembly and Installation

This chapter contains the following topics:

- Section 2.1 “Site Planning” on page 2-1
- Section 2.2 “Space Planning” on page 2-2
- Section 2.3 “Rack Physical Characteristics” on page 2-3
- Section 2.4 “Environmental Requirements” on page 2-3
- Section 2.5 “Heating, Ventilation, and Air Conditioning” on page 2-4
- Section 2.6 “Clearance and Service Access” on page 2-5

2.1 Site Planning

It is easier to address facility design issues in the planning stages than to correct problems after the fact. Often, it is impossible to implement extensive actions in an on-line computer room without impacting uptime. For this reason, it is extremely important that adequate attention is paid to issues such as the physical location of the building, the location of the data center relative to the other areas of the building, and all aspects of the support infrastructure.

Facility design issues that should be addressed include:

- General computer room criteria
- Cleaning procedures and equipment
- Facility power requirements
- Grounding and bonding
- Input Power Quality
- Wiring and Cabling
- Electromagnetic Compatibility

For further details regarding site planning, refer to the *Sun Microsystems Data Center Site Planning Guide.*

2.2 Space Planning

Note – For further details regarding space planning, refer to the *Sun Microsystems Data Center Site Planning Guide.*

The Sun TCF is built with sections of racks to maximize space and enable the addition of more compute engines. Space planning is based upon the number of Sun TCF racks that are required by a project. Rackmounted systems are used to minimize floor space.

Each rack requires 23 inches by 30 inches (58.42 cm by 76.2 cm) of floor space. The bottom panel on the exhaust side of the rack (the left side if you are facing the front of the rack) is vented to allow airflow. Ensure that there is a clearance of at least 2 inches on this side of the rack to allow proper air circulation.

FIGURE 1-1 on page 1-4 and FIGURE 1-2 on page 1-5 shows the *base rack*. The base rack accommodates a disk array (a second disk array may be added), one file server, four compute engines, and networking equipment.

FIGURE 1-3 on page 1-7 and FIGURE 1-4 on page 1-8 illustrate an *expansion rack*. The expansion rack consists of nine compute engines. The expansion rack is electrically coupled to the base rack to provide either a 52-CPU small farm configuration, an 86-CPU medium farm configuration, or an 88-CPU medium farm configuration.

FIGURE 1-5 on page 1-10 and FIGURE 1-6 on page 1-11 illustrate a *star rack*. The star rack accommodates two disk arrays, one file server, four compute engines, and networking equipment. Additionally, the star rack contains a Cisco C3508 Ethernet switch that allows the Sun TCF large farm configuration.

2.3 Rack Physical Characteristics

Caution – The rack structure and casters are designed to handle a 1300 pound (589 kg) static load. Make no mechanical or electrical modifications to this rack. Sun is not responsible for the regulatory compliance if the rack is modified.

The physical characteristics of the rack include:

- Internal dimensions conform to EIA RS-310C standard (RETMA) for 19-inch (482 mm) racks. Universal mounting holes are used with 10-32UNF tapped holes in all locations. The nominal rack opening is 17.875 inches (454 mm).
- A vertical panel opening of 38 rack unit (RU) minimum is provided to accommodate various rackmountable devices. One RU is equal to 1.75 inches (44.45 mm).
- Overall rack height with cosmetic panels is 73.5 inches (187 cm) maximum.

2.4 Environmental Requirements

Avoid temperature extremes and keep the work area clean. Maintain the environmental requirements described in TABLE 2-1.

The rack should be in a computer room environment. Computer room installation provides secure access to computers and stored information, and provides control over environmental factors such as temperature, humidity, and airborne dust. Computer room installation can also help protect equipment from fire, flood, or other danger originating in the building.For further details regarding environmental requirements, refer to the *Sun Microsystems Data Center Site Planning Guide.*

TABLE 2-1 Operating Environment

Parameter	Value
Temperature	
Operating	41°F to 104°F (5°C to 40°C)
Non-operating	-4°F to 140°F (-20°C to 60°C)
Humidity	
Operating	20% to 80% RH, noncondensing 80.6°F (27°C) maximum wet bulb

TABLE 2-1 Operating Environment *(Continued)*

Parameter	Value
Non-operating	5% to 93% RH, noncondensing
Altitude	
Operating	0 to 9,843 feet (0 to 3 km)
Non-operating	0 to 39,370 feet (0 to 12 km)

2.5 Heating, Ventilation, and Air Conditioning

It is essential to plan for sufficient air conditioning. TABLE 2-2 lists each Sun TCF rack air conditioning tonnage. For further details regarding heating, ventilation, and air conditioning, refer to the *Sun Microsystems Data Center Site Planning Guide.*

TABLE 2-2 Sun TCF Rack Air Conditioning Tonnage

Rack	Air conditioning tonnage
Base rack	1.95 tons
Expansion rack	2.4 tons
Star rack	2.25 tons

2.6 Clearance and Service Access

TABLE 2-3 Clearance and Service Access

	With Service Access	Without Service Access
Front	48 inches (122 cm)	24 inches (61 cm)
Rear	36 inches (92 cm)	24 inches (61 cm)
Left	36 inches[1] (92 cm)	2 inches[2] (51 cm)
Right	36 inches[1] (92 cm)	0

1. Side access may be required for some service procedures. Refer to the documentation that came with the devices.
2. The disk array requires a clearance of at least two inches for airflow. Unless otherwise stated in the documentation that shipped with your device, no clearance access is required.

CHAPTER 3

Unpacking and Installing the Rack

This chapter contains the following topics:

- Section 3.1 “Unpacking the Rack” on page 3-1
- Section 3.2 “Moving and Placing the Rack” on page 3-2
- Section 3.3 “Adjusting the Leveling Pads” on page 3-3
- Section 3.4 “Installing the Stabilizer Legs” on page 3-4
- Section 3.5 “Installing the Floor Brackets” on page 3-6
- Section 3.6 “Cabling the Rack” on page 3-8

3.1 Unpacking the Rack

If the rack is already unpacked, proceed to the Section 3.2 “Moving and Placing the Rack” on page 3-2.

1. **Inspect all shipping containers for evidence of physical damage.**

   If a shipping carton is damaged, request that the carrier’s agent be present when the carton is opened. Keep all of the contents and packing material for the agent’s inspection.

Caution – Use three or more people to unpack and set up the rack. A typical rack weighs approximately 990 pounds (449 kg).

2. **Unpack the rack.**

   Refer to the unpacking instructions printed on the shipping carton.

Note – The stabilizer legs, floor mounting brackets, and associated hardware are packed in the side saddles of the packing material that encase the rack.

3. **Verify that the components you received match the shipping list.**

4. **Reassemble the packing materials and save them for future use. To prepare the rack for shipment or storage, follow (in reverse order) the unpacking instructions attached to or printed on the panels of each shipping container.**

Note – If the shipping materials cannot be stored, recycle or dispose of the materials properly. Your local recycling authority can supply specific information.

3.2 Moving and Placing the Rack

Leave enough space to situate the base rack near the expansion rack. The ground strap between the base rack and the expansion rack is approximately 6.5 feet (2 meters) long. (The procedure for connecting the ground strap is covered in detail in Section 3.6.3 “Connecting the Ground Strap” on page 3-14.)

Refer to the specifications in Appendix A when determining where to place the rack.

Caution – Never lift the rack by the cosmetic panel surfaces or pull the rack by the back door. Use three or more people to move the rack safely. Two people must restrain the front of the rack to control the movement. One person should be behind the rack. To prevent the rack from tipping as it is moved, push or pull only on the middle section of the rack.

For mobility, allow 3 inches (7.62 cm) clearance on both sides of the rack.

3.3 Adjusting the Leveling Pads

Skip to Section 3.5 “Installing the Floor Brackets” on page 3-6 if you are installing the floor mounting brackets.

Leveling pads (screws) are located at each corner of the base of the rack (FIGURE 3-1).

Caution – If the four floor mounting brackets are not to be used, the four leveling pads mounted on the bottom plate of the rack must be lowered to the floor for the rack to meet Underwriters’ Laboratories physical stability requirements.

1. **Open the back door.**
2. **Remove the leveling wrench by unlocking the plastic strap that holds it to the inside of the frame, near the top of the rack.**

   Do not cut the strap. Press the plastic tab to unlock the strap around the wrench, then slide part of the strap through the lock to loosen the wrench.
3. **Using the leveling wrench, adjust the four leveling pads on the rack frame.**

   The four pads should press against the floor so that the rack does not move or rock in any direction.

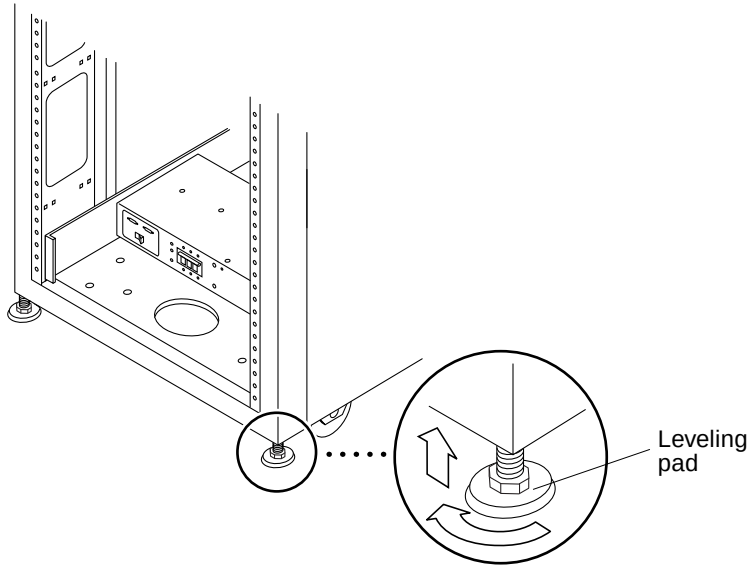


FIGURE 3-1 Rack Leveling Pads

3.4 Installing the Stabilizer Legs

Skip to Section 3.5 “Installing the Floor Brackets” on page 3-6 if you are installing the floor mounting brackets.

The stabilizer legs help prevent the rack from tipping over when rackmounted devices are extended from the rack. The stabilizer legs must be properly installed and set to be effective.

Caution – Always extend the stabilizer legs before attempting to install new devices or service devices in the rack.

1. **Loosen the securing screw on the right stabilizer leg (**FIGURE 3-2**).**

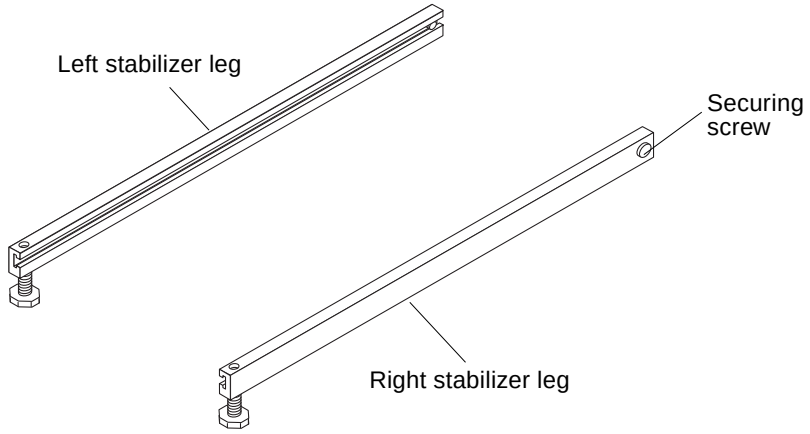


FIGURE 3-2 Stabilizer Legs

2. **Slide the right stabilizer leg over the three mounting screws at the bottom of the rack (**FIGURE 3-3**).**
3. **Tighten the securing screw (**FIGURE 3-2 **on page 3-4) to prevent the stabilizer leg from falling off the mounting screws when it is extended.**
4. **Fully extend the right stabilizer leg.**
5. **Repeat Step 1 through Step 3 for the left stabilizer leg.**

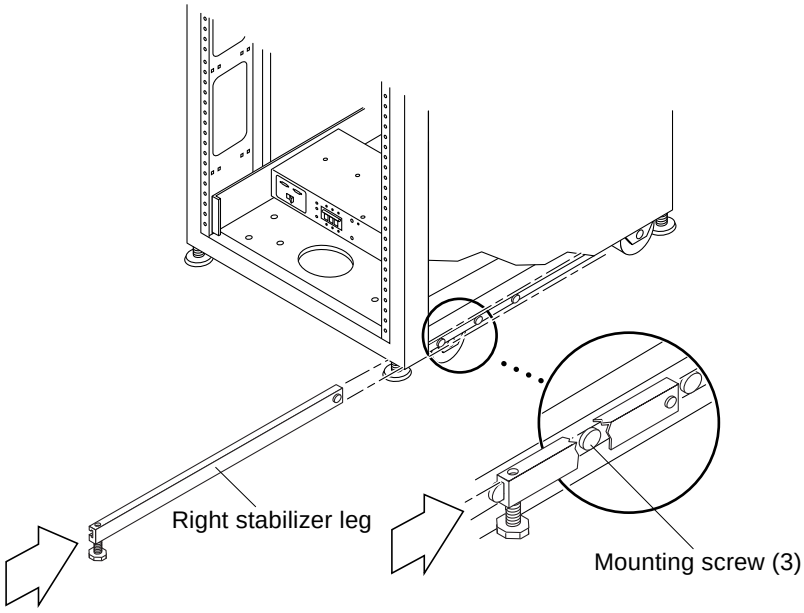


FIGURE 3-3 Installing the Right Stabilizer Leg

6. **Using the leveling wrench (not illustrated), adjust the feet on both stabilizer legs so that they touch the floor surface (**FIGURE 3-4**).**
7. **Slide both stabilizer legs under the rack.**
8. **Secure the leveling wrench inside the rack.**
9. **Close the door.**

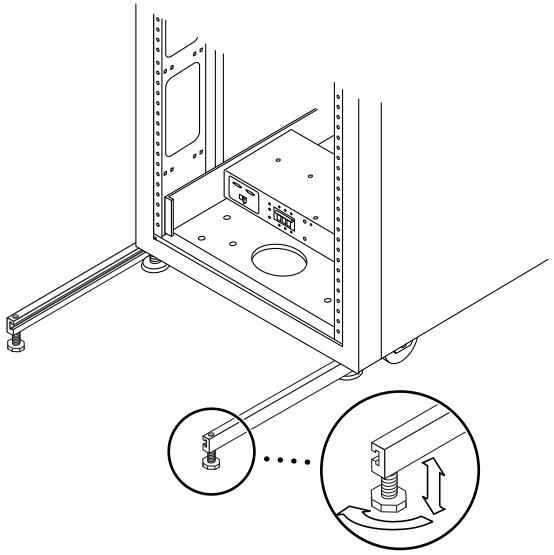


FIGURE 3-4 Adjusting the Leveling Pads on the Stabilizer Leg

3.5 Installing the Floor Brackets

Skip this section if you have installed the stabilizer legs.

Use the four floor brackets in place of the stabilizer legs when you attach the rack to the floor.

Caution – Do not bolt the floor mounting brackets to the deck plating of a raised (computer room) floor.

Note – If the floor brackets are being installed over previously installed threaded rods, loosely install the floor brackets to the rods and then to the rack.

1. **Remove the three mounting screws on the bottom right of the rack (**FIGURE 3-5**).**

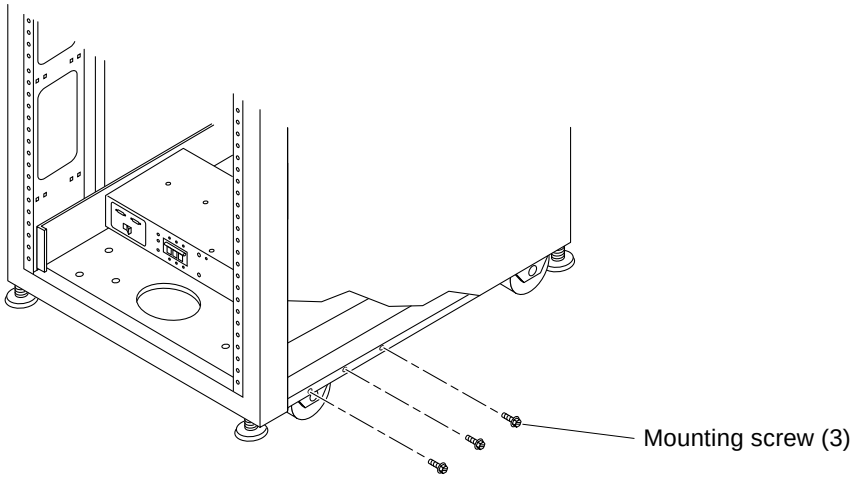


FIGURE 3-5 Removing the Mounting Screws

2. **Using a 7/16-inch wrench, attach the right floor brackets to the front and back of the rack (**FIGURE 3-6**).**

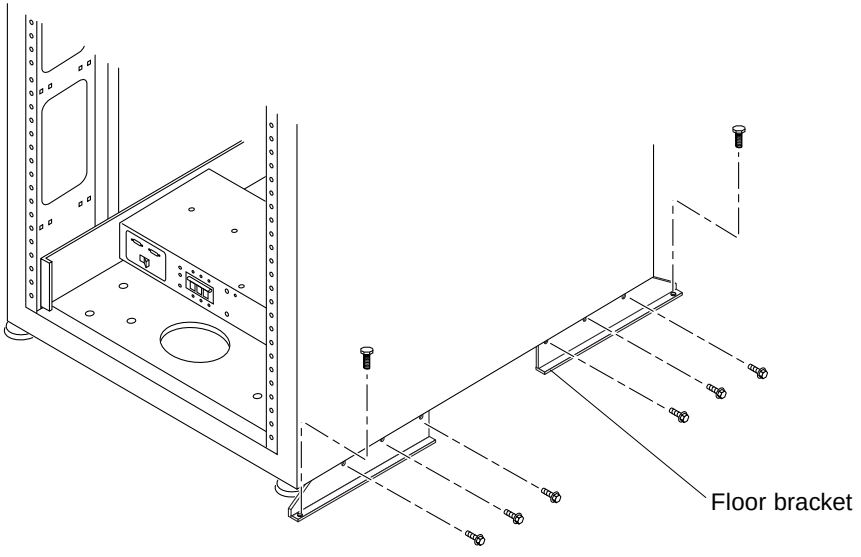


FIGURE 3-6 Attaching the Floor Brackets

3. **Bolt the right floor brackets to the floor.**

   The bolts to secure the floor brackets to the floor are not included.

4. **Repeat Step 1 through Step 3 for the left floor brackets.**

3.6 Cabling the Rack

This section describes how to connect the power cord to the rack power sequencer, and how to connect the ground strap and fan-fail cable from the rack to the file server and other racks.

Note – The keys for the Sun TCF system are found in the rack and in the Sun TCF Accessory Kit, 565-1656.

- Section 3.6.1 “Preparing the Rack” on page 3-8
- Section 3.6.2 “Connecting the Power Cord” on page 3-11
- Section 3.6.3 “Connecting the Ground Strap” on page 3-14
- Section 3.6.4 “Final Cabling Tasks” on page 3-15

For instructions on how to cable storage device options in the cabinet, see the documentation that is shipped with each device.

3.6.1 Preparing the Rack

1. **Verify that the key switch located at the bottom front of the rack is in the Standby position (**FIGURE 3-7**).**

2. **Open the back door of the rack (**FIGURE 3-8**).**

3. **Loosen the screws on the front and back trim panels and remove the panels (**FIGURE 3-7**).**

   Set the panels aside.

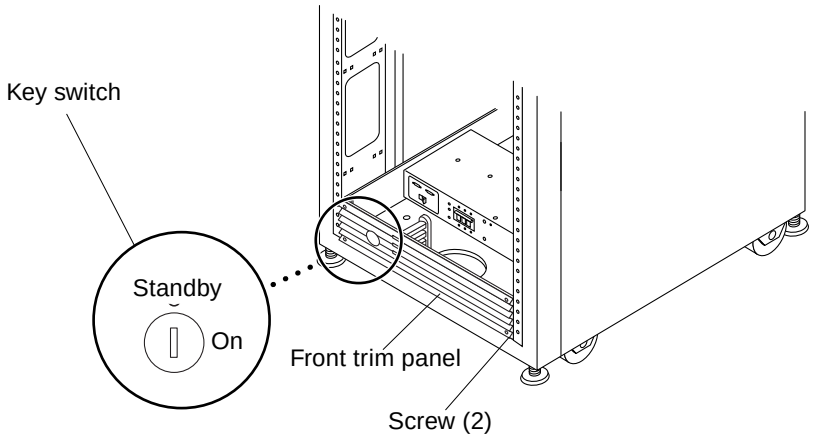


FIGURE 3-7 Location of Key Switch on Bottom Front Panel

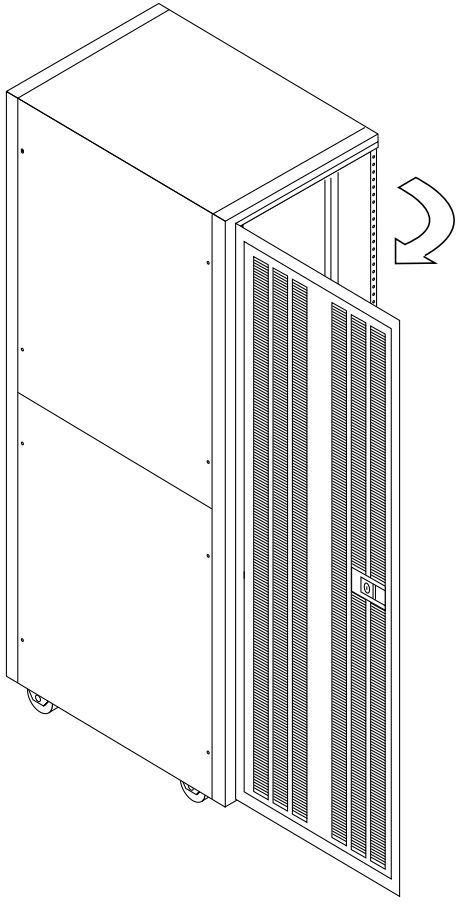


FIGURE 3-8 Opening the Back Door of the Rack

3.6.2 Connecting the Power Cord

Caution – The rack is designed to work with single-phase power systems that have a grounded neutral conductor. To reduce the risk of electric shock, do not connect the rack into any other type of power system.

1. **Open the back door (**FIGURE 3-8 **on page 3-10).**
2. **Verify that each AC power sequencer circuit breaker is in the Off position and the Local/Remote switch is in the Remote position (**FIGURE 3-9**).**

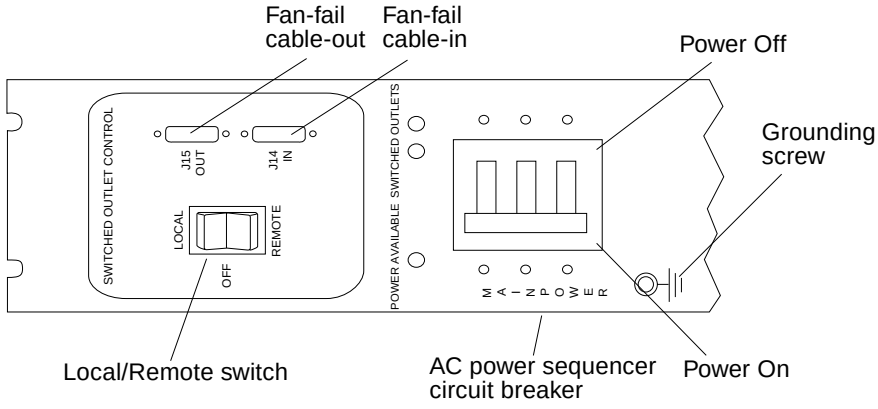


FIGURE 3-9 Power Sequencer Control Panel

3. **Check the electrical ratings label on the serial number label attached to the power sequencer. Verify that the stated rating matches the AC input voltage to the system (refer to Section A.3 “Electrical Specifications” on page A-4).**
4. **Connect the female end of each power cord to the power sequencer connector (**FIGURE 3-10**).**

   Flip the cover latch open to access the connectors.

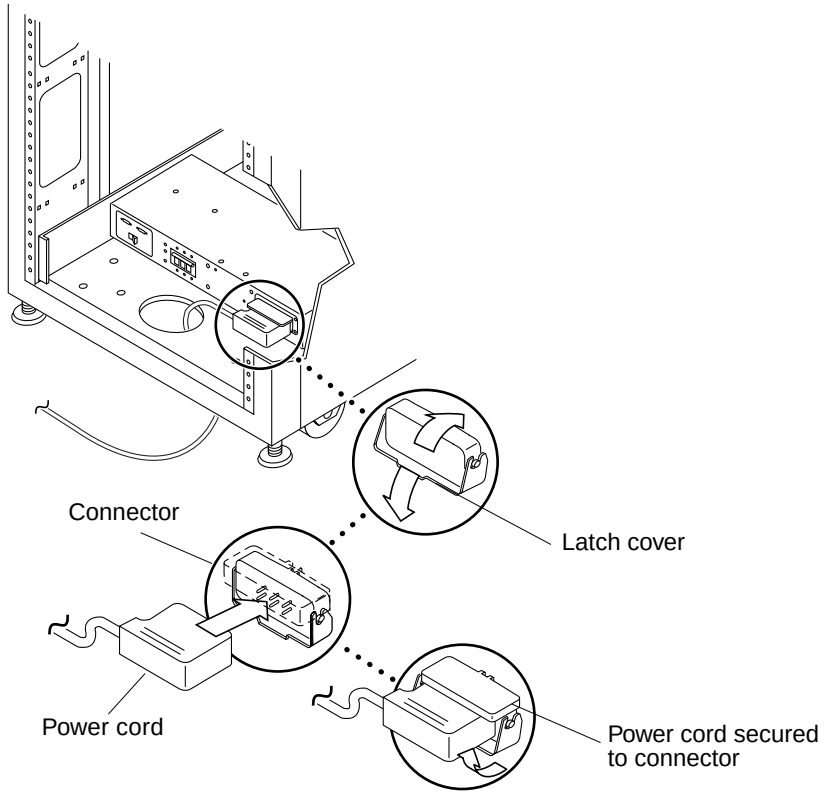


FIGURE 3-10 Connecting the Power Cord

5. **Pull the latch cover over the power cord to secure it to the power socket.**

Note – Route the power cord directly through the opening in the rack base.

---

6. **Connect the other end of the power cord to a grounded outlet (**FIGURE 3-11 **and** FIGURE 3-12**).**

   The following connector types are provided on the power cord:

   - NEMA L6-30P for 200-240V North American operation
   - 32A, single-phase, IEC 309 connector for 200–240V international operation

7. **Repeat this procedure for the other power sequencer.**

Caution – Risk of electric shock. Do NOT turn on power to the unit yet.

The rack has a high leakage current to ground. Strictly observe all caution and note statements to reduce the risk of electric shock.

Note – If the appropriate mating receptacle is not available, the connector may be removed from the cord. The cord may then be permanently connected to a dedicated branch circuit by a qualified electrician. Check local electrical codes for proper installation requirements.

Cable ties provided with the rack can be used as cable restraints. For each cable, pass a cable tie through one of the slits located along the base of the rack. Secure the cable in the cable tie.

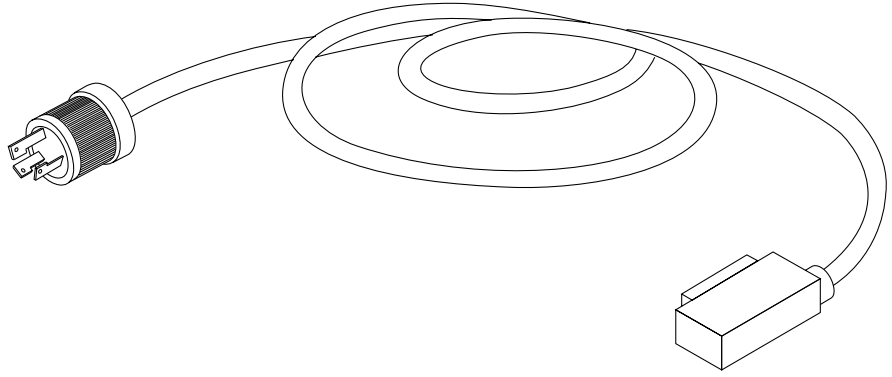


FIGURE 3-11 NEMA L6-30P for 200-240V North American Operation

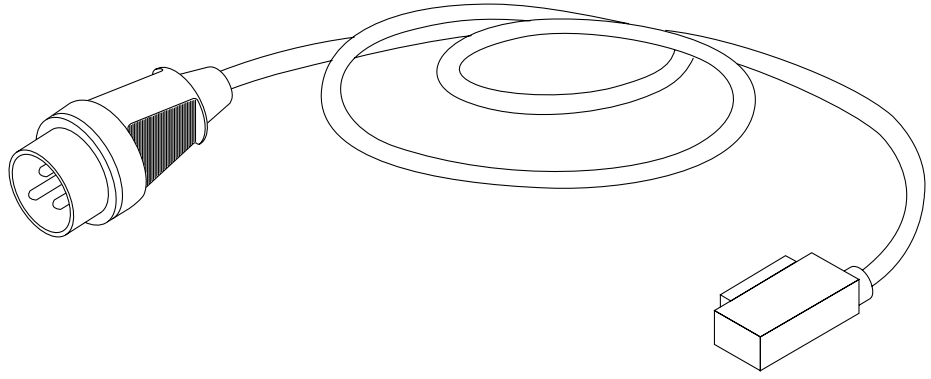


FIGURE 3-12 IEC 309 Connector for 200–240V International Operation

3.6.3 Connecting the Ground Strap

Caution – An insulated grounding conductor must be installed as part of the circuit supplying power to the rack. This conductor must be of identical size, insulation material, and thickness to the neutral grounded and hot ungrounded branch-circuit supply conductors, but green (with or without yellow stripe[s]). Ground wires can (and should be) larger than circuit conductors.

The grounding conductor described in the above caution statement must be grounded to either of the following:

- Earth at service equipment
- Supply transformer or motor-generator set (if supplied by a separately derived system)

The outlets in the vicinity of the rack must be of the grounding type, and the grounding conductors for these outlets must be connected to earth ground.

Connecting the ground strap between a rack and the next nearest rack prevents ground loops between the two racks and keeps data errors from occurring.

1. **Locate the 2-meter ground strap from the kit that was shipped with your rack.**
2. **Screw one end of the ground strap to the power sequencer on the second rack nearest to the rack.**
3. **Screw the other end of the ground strap to the nearest power sequencer in the rack (**FIGURE 3-13**).**

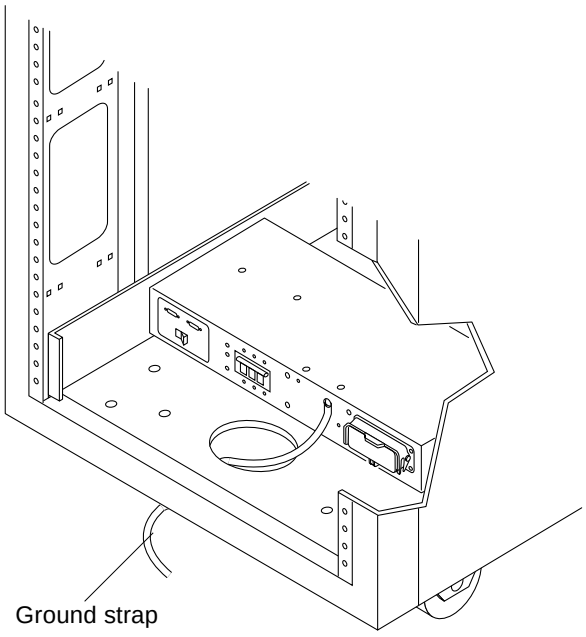


FIGURE 3-13 Connecting the Ground Strap to the Front Power Sequencer

3.6.4 Final Cabling Tasks

1. **Replace the trim panels.**

   Tighten the three screws to secure the front and back trim panels to the rack.

Note – Cables should be routed between the bottom panel and the kick panel if cables are being routed under the floor.

---

2. **Close the back door.**

   For preconfigured racks, refer to the *Sun StorEdge Expansion Cabinet Installation and Service Manual*.

CHAPTER 4

Installing a Second Disk Array

This chapter provides procedures for installing a second disk array into the base rack.

- Section 4.1 “Installing the Rails” on page 4-2
- Section 4.2 “Installing the Chassis in the Rack” on page 4-4
- Section 4.3 “Connecting the Power Cable” on page 4-6
- Section 4.4 “Installing Additional Interface Boards and GBICs” on page 4-8
- Section 4.5 “Disk Array-to-File Server Cabling” on page 4-9
- Section 4.6 “Disk Array 1-to-Disk Array 2 Cabling” on page 4-9
- Section 4.7 “Repositioning the Airflow Baffle” on page 4-9
- Section 4.8 “Reassembling the Rack” on page 4-16

Note – Rackmount placement information for the disk array, as well as other devices that can be mounted in the rack, is available on the Web at `http://docs.sun.com:80/ab2/coll.242.1/@Ab2CollView`. If you do not have access to the Web, contact your service provider.

Note – When you install a second disk array in the base rack, you must remove and reposition the airflow baffle above the second disk array (see Section 4.7 “Repositioning the Airflow Baffle” on page 4-9).

Note – The keys for the Sun TCF system are found in the rack and in the Sun TCF Accessory Kit, 565-1656.

4.1 Installing the Rails

Follow the instructions on preparing for service in your system or rack documentation. If necessary, be sure to:

- Extend the stabilizer legs
- Remove or open the top front panel
- Remove or open the vented back panel

Note – Rackmount placement information for the disk array, as well as other devices that can be mounted in the rack, is available on the Web at `http://docs.sun.com:80/ab2/coll.242.1/@Ab2CollView`. If you do not have access to the Web, contact your service provider.

---

1. **Determine where the disk array is to be installed.**
2. **Unlock, open, and remove the rack door(s) as appropriate.**
3. **Power off the system.**

   See Section 6.2 “Power On and Off Sequence” on page 6-2.
4. **Extend the rack stabilizer legs.**
5. **Remove the filler panel that covers the opening where the disk array is to be installed.**

   a. **Using a No. 2 Phillips screwdriver, loosen the captive screws that fasten the panel to the cabinet.**

   b. **Remove the filler panel and save it for future use.**
6. **Refer to the** *Rackmount Placement Matrix* **for the correct rack hole numbers to use when installing the disk array.**
7. **Loosely thread in the two bottom screws on the left side of the rack (**FIGURE 4-1**).**

   Install the screws as specified in the online *Rackmount Placement Matrix*.

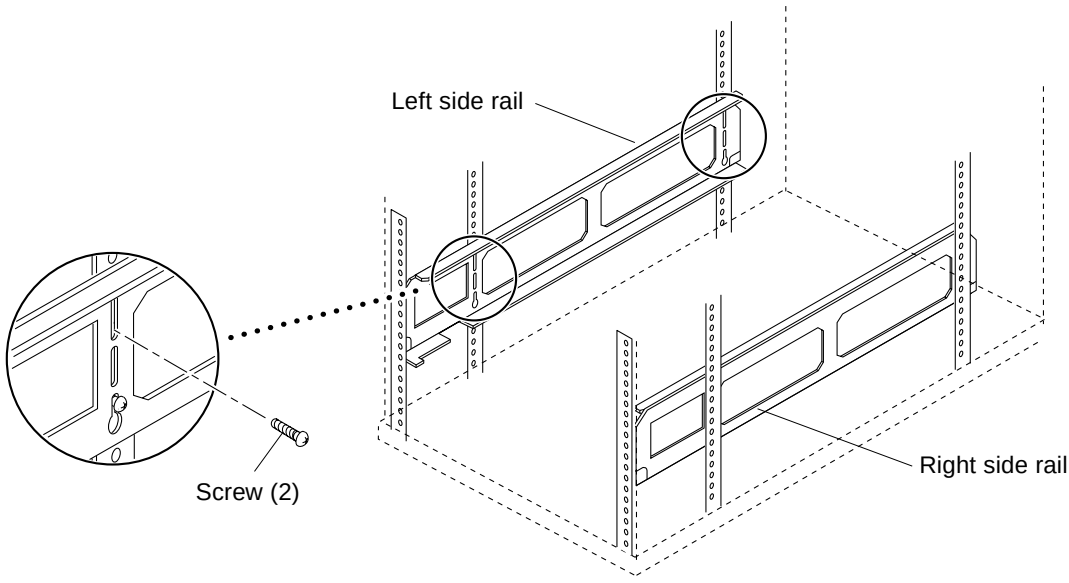


FIGURE 4-1 Threading Screws Into the Rack

8. **Place the left side rail in the rack. Align the open-slotted holes at the bottom of the rail with the screws installed in the preceding step.**
9. **Install the screws in the front and back top rail holes.**

   Install the screws as specified in the online *Rackmount Placement Matrix*.
10. **Tighten all four screws.**
11. **Repeat Step 7 through Step 10 for the right side rail.**

4.2 Installing the Chassis in the Rack

Caution – To avoid damage to internal circuits, do not connect or disconnect any cable while the system is powered on.

Caution – The rack can become front-heavy while the chassis is being installed. Unless the rack is bolted to the floor, ensure that the stabilizer legs are extended before proceeding. Failure to extend the legs can result in the rack tipping forward and injuring personnel.

Caution – This installation requires two people to lift and move the disk array. Use care to avoid injury. A disk array with a baseplate attached may weigh up to 130 pounds (59 kg).

When completing a two-person procedure, always communicate your intentions clearly before, during, and after each step to minimize confusion.

Note – Rackmount placement information for the disk array, as well as other devices that can be mounted in the rack, is available on the Web at `http://docs.sun.com:80/ab2/coll.242.1/@Ab2CollView`. If you do not have access to the Web, contact your service provider.

Refer to the *Rackmount Placement Matrix* for the correct order for installing the chassis.

1. **With the aid of an assistant, lift the chassis (one person on each side) and approach the rack with the chassis back facing the rack.**
2. **Align the chassis baseplate with the mating side rails in the rack (**FIGURE 4-2**).**

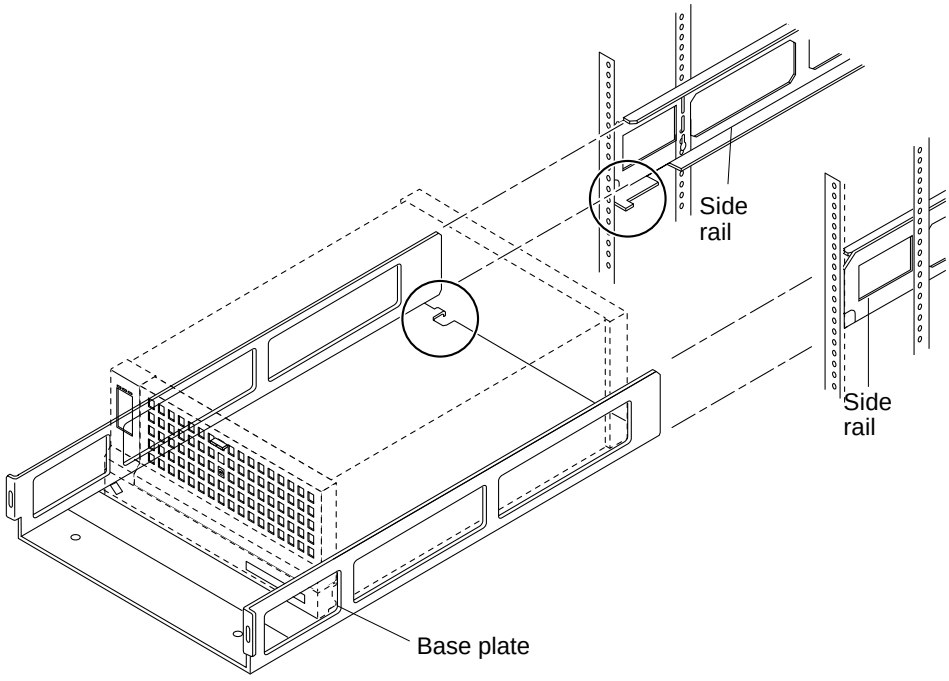


FIGURE 4-2 Aligning the Chassis and Baseplate With the Side Rails

3. **Rest the chassis on the side rails, then slide the chassis in.**
4. **Tighten the screws in the front of the rack (**FIGURE 4-3**).**
5. **Connect the fiber optic cable(s) to the GBIC connectors (see Chapter 5 “Cabling the Sun TCF Devices”).**

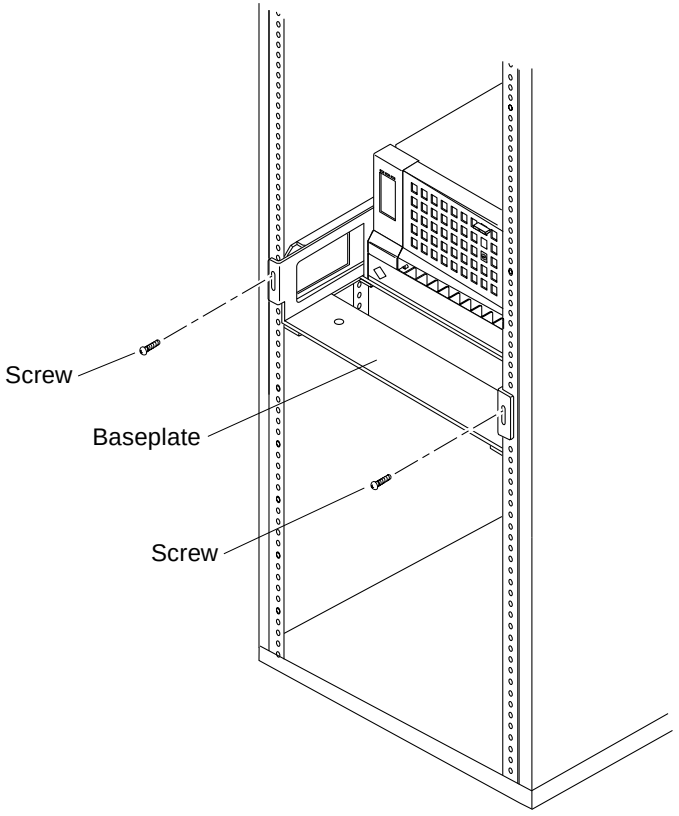


FIGURE 4-3 Installing Screws to Secure the Baseplate to the Side Brackets

4.3 Connecting the Power Cable

1. **Connect the female end of the power cord to the power receptacle at the back of the disk array (**FIGURE 4-4**).**

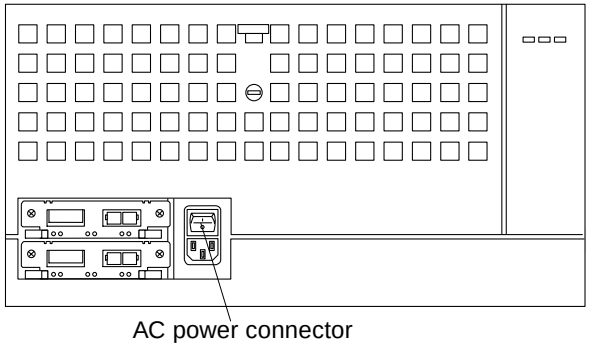


FIGURE 4-4 AC Power Connector

Caution – The power sequencer serves as the primary disconnect device for the disk array. Do not connect the disk array into a power source other than the power sequencer. Personal injury can occur if you work on a disk array that is connected into another power source, since that power source may still be active when you work on the disk array.

2. **Route the power cables from the disk array to the appropriate power sequencer outlet (see** FIGURE 4-5**).**

Note – Connect the power cable of the second disk to the power sequencer that *is not* being used by disk array 1. For example, if the disk array 1 power cable is connected to the front power sequencer, then connect the disk array 2 power cable to the back power sequencer.

3. **Connect the disk array power cord to the power sequencer (refer to** FIGURE 4-5**).**

   The following table provides the recommended power sequencer connections.

Note – Follow the power cabling diagram in the *Sun StorEdge A5000 Hardware Configuration Guide*.

4. **Secure the extra length of the power cord near the power distribution unit.**
5. **Install the trim strips.**

   Using a No. 2 Phillips screwdriver, tighten the captive screws.

6. **Retract the rack stabilizer legs.**

7. **Power on the system.**

   See Section 6.2 “Power On and Off Sequence” on page 6-2.

8. **Replace, close, and lock the rack door(s) as appropriate.**

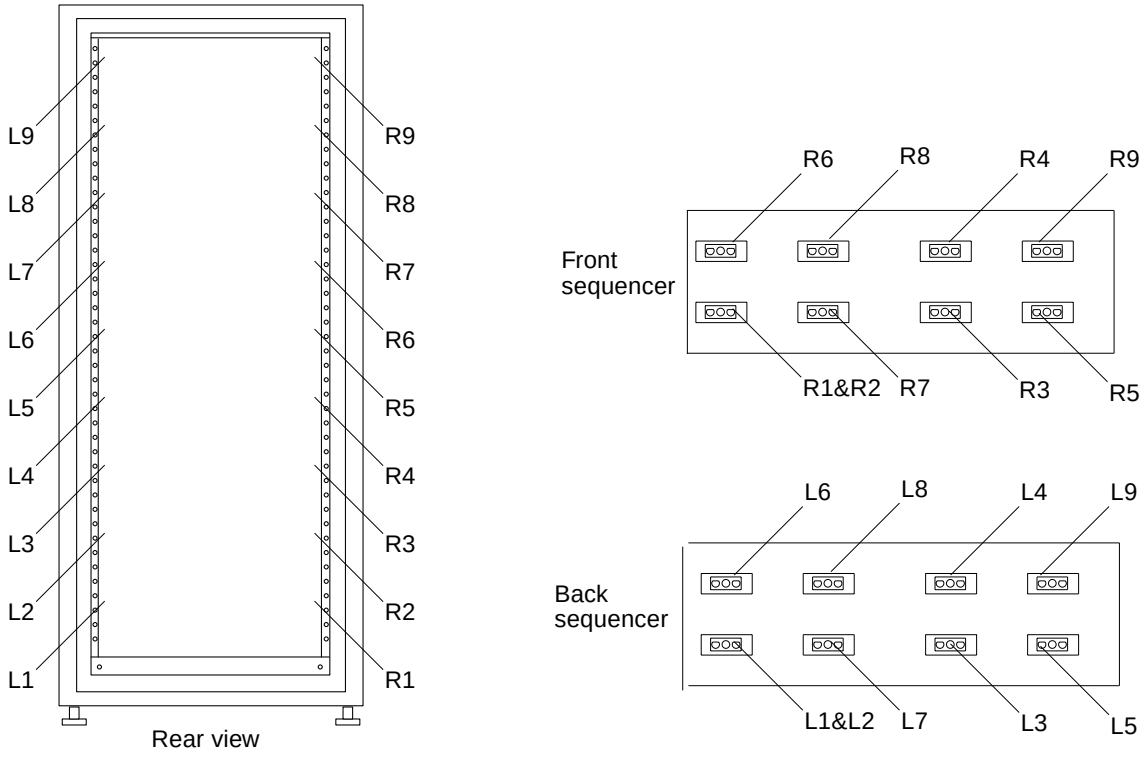


FIGURE 4-5 Power Cable Routing

4.4 Installing Additional Interface Boards and GBICs

Depending upon the configuration, installing additional interface boards or GBICs may be required. Refer to the *Sun StorEdge A5000 Hardware Configuration Guide* and the *Sun StorEdge A5000 Installation and Service Manual*.

4.5 Disk Array-to-File Server Cabling

Refer to Section 5.1.1.1 “Disk Array 1-to-File Server Cabling” on page 5-8.

4.6 Disk Array 1-to-Disk Array 2 Cabling

Refer to Section 5.4.1.2 “Disk Array 1-to-Disk Array 2 Cabling” on page 5-41.

4.7 Repositioning the Airflow Baffle

When installing a second disk array into the base rack, it is necessary to first remove the airflow baffle. After the second disk array is installed, replace the airflow baffle directly above the second disk array. FIGURE 4-6 shows the main and side baffles.

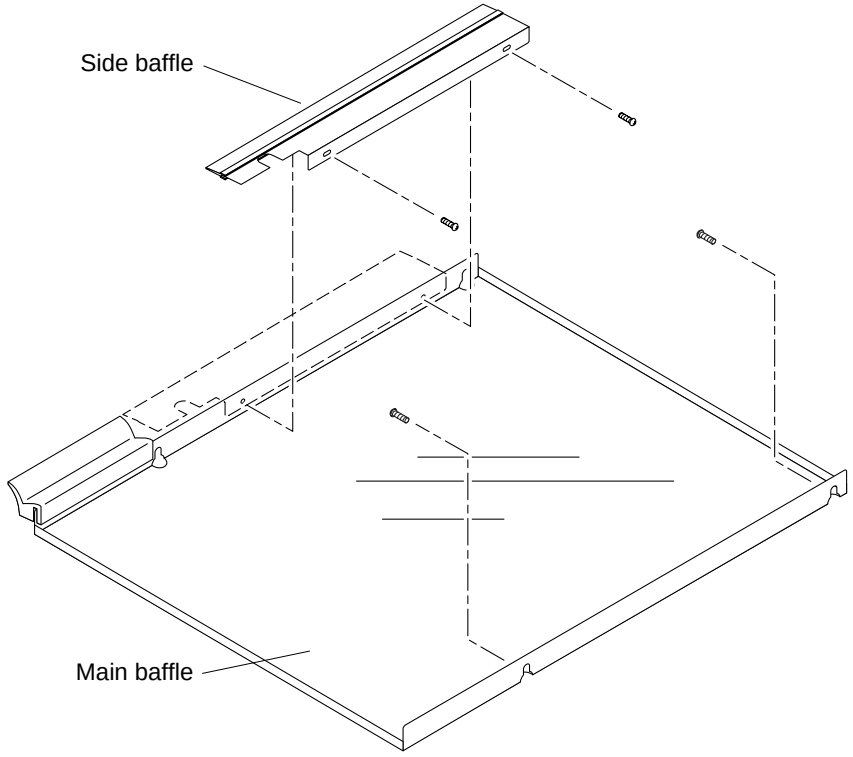


FIGURE 4-6 Main and Side Baffles

4.7.1 Removing the Airflow Baffle

Use section contains the following topics:

- Section 4.7.1.1 “Removing the Filler Panel Assembly” on page 4-10
- Section 4.7.1.2 “Removing the Side Baffle” on page 4-11
- Section 4.7.1.3 “Removing the Main Baffle” on page 4-11

4.7.1.1 Removing the Filler Panel Assembly

Use a screwdriver to detach the filler panel assembly from the rack. The filler panel assembly has two captive screws.

4.7.1.2 Removing the Side Baffle

1. **Loosen and remove the two screws that secure the side baffle to the main baffle (**FIGURE 4-7**).**

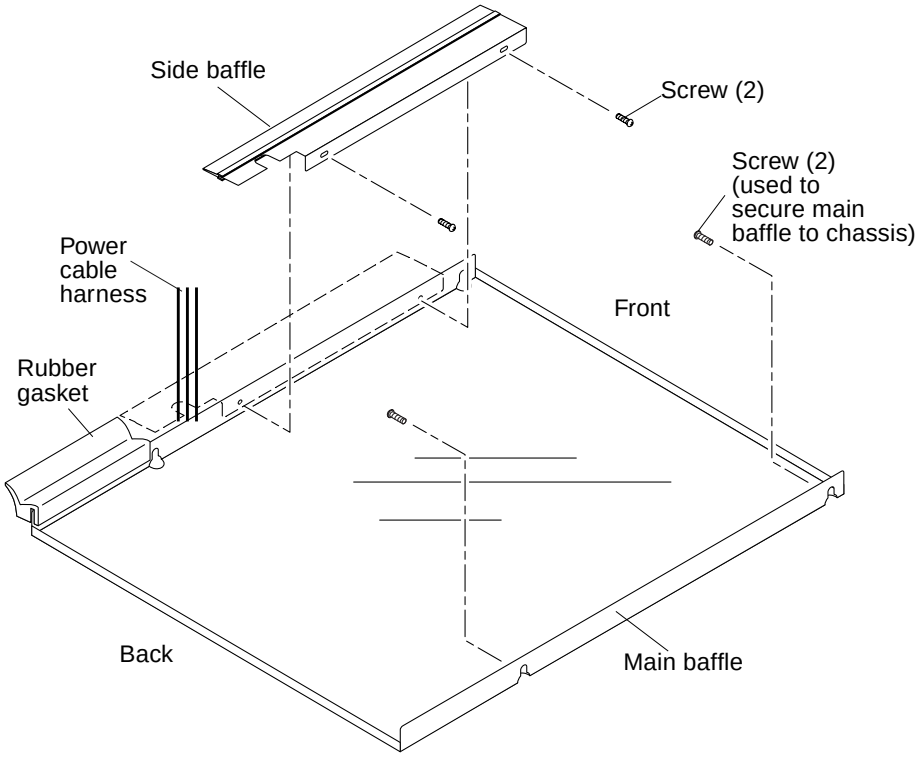


FIGURE 4-7 Removing the Side Baffle

2. **Slide the side baffle away from the left side of the main baffle.**

4.7.1.3 Removing the Main Baffle

1. **Loosen the four screws that secure the main baffle to the rack.**
2. **Raise the main baffle from the four screws that the baffle rests on and slide the main baffle from the rack.**
3. **Remove the four 10 x 32 screws from the rack holes.**

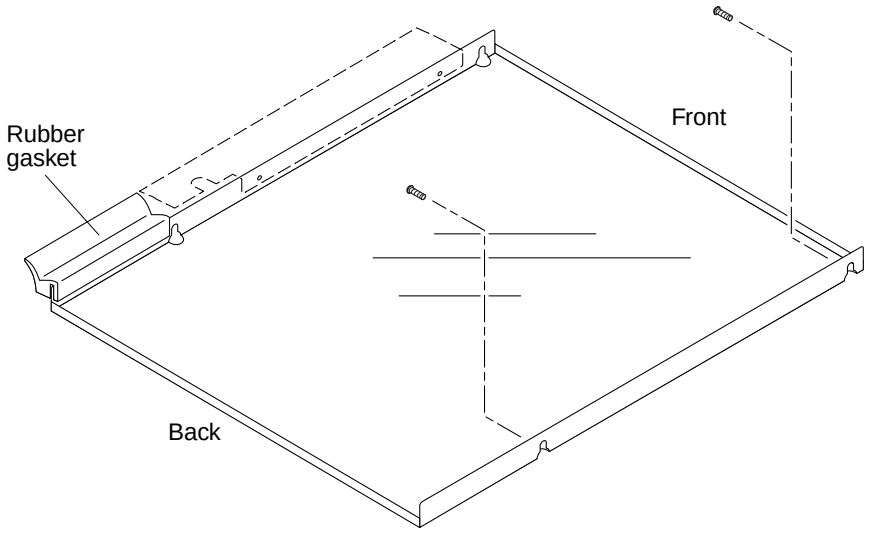


FIGURE 4-8 Main Baffle

4.7.2 Replacing the Airflow Baffle

Use section contains the following topics:

- Section 4.7.2.1 “Replacing the Main Baffle” on page 4-12
- Section 4.7.2.2 “Replacing the Side Baffle” on page 4-13
- Section 4.7.2.3 “Replacing the Filler Panel Assembly” on page 4-14

4.7.2.1 Replacing the Main Baffle

Note – Rackmount placement information for the disk array, as well as other devices that can be mounted in the rack, is available on the Web at `http://docs.sun.com:80/ab2/coll.242.1/@Ab2CollView`. If you do not have access to the Web, contact your service provider.

---

1. **Refer to the** *Rackmount Placement Matrix* **for the correct rack hole numbers to use when installing the Sun TCF component.**
2. **Install four 10 x 32 screws halfway into the rack holes.**

3. **Identify the front and back of the main baffle (**FIGURE 4-8 **on page 4-12).**

   A rubber gasket is located on the back left corner of the main baffle . The baffle installs from the back of the rack.

4. **Grasp the main baffle by the back corners and raise the baffle up.**

5. **Guide the baffle through the back of the rack so that the front of the baffle is at the front of the rack.**

6. **Guide the four corner screw holes on the main baffle onto the four screws so that the baffle rests on the screws.**

7. **Tighten the four screws to secure the main baffle to the rack.**

4.7.2.2 Replacing the Side Baffle

1. **Identify the side baffle front and back (**FIGURE 4-9**).**

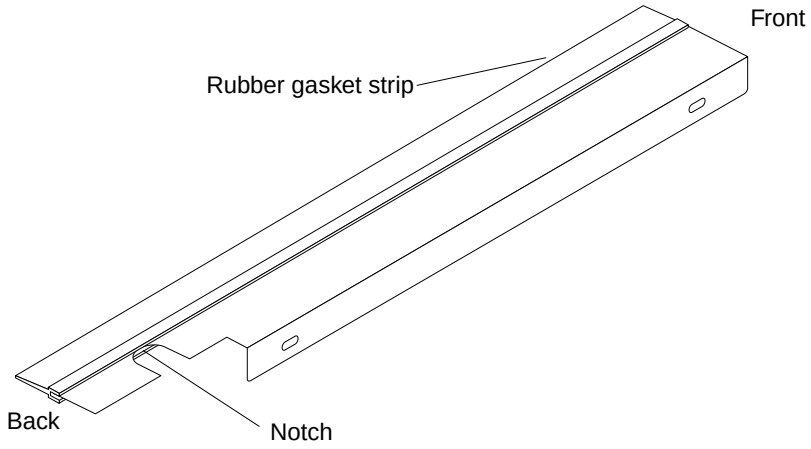


FIGURE 4-9 Side Baffle

Note – If the side baffle mounting position is near the backmost power cable (which is tie-wrapped to the rack), you must cut the tie wrap so that the side baffle installs correctly.

---

2. **Slide the side baffle onto the left side of the main baffle, passing the side baffle notch around the power cable harness (**FIGURE 4-7 **on page 4-11).**

   The main baffle has a rubber gasket in the left back corner.

3. **Align the side baffle holes with the two interior holes on the main baffle.**

   The side baffle gasket must contact and seal with the rack side panel.

4. **Install and tighten the two screws to secure the side baffle to the main baffle.**

4.7.2.3 Replacing the Filler Panel Assembly

- **Use a screwdriver to attach the filler panel assembly to the rack.**

  The filler panel assembly has two captive screws. FIGURE 4-10 shows the repositioned airflow baffle with the filler panel installed.

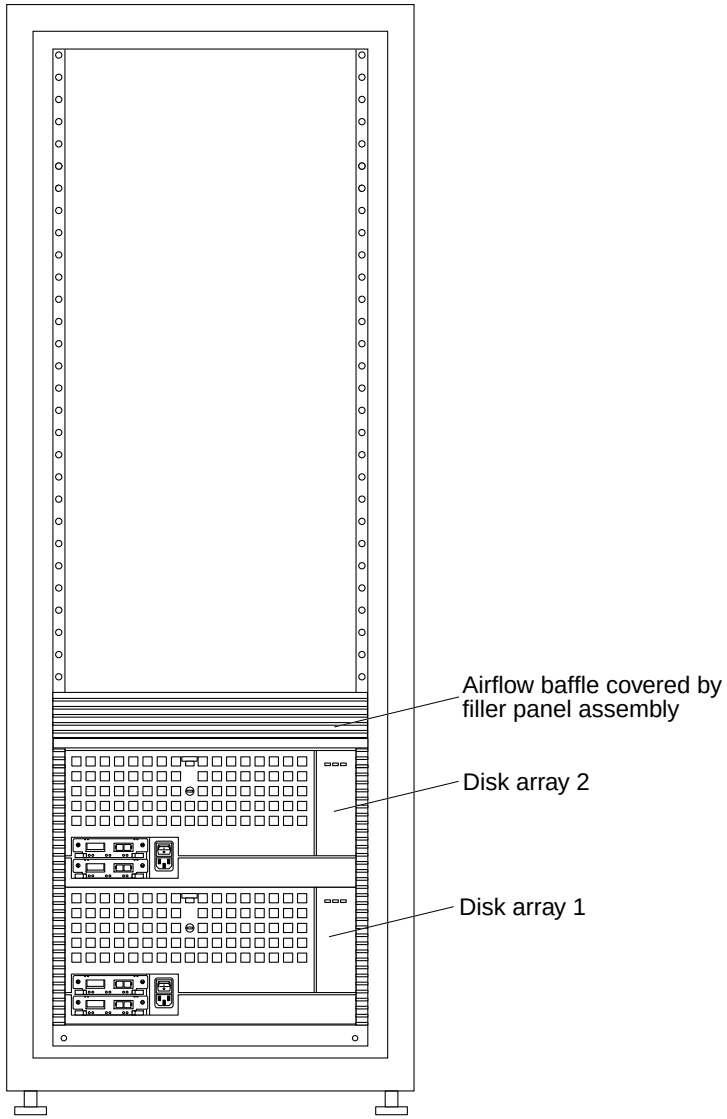


FIGURE 4-10 Installing the Side Baffle

4.8 Reassembling the Rack

Follow the instructions on preparing for service in the system or rack documentation. If necessary, be sure to:

- Replace or close the top front panel
- Replace or close the vented back panel
- Push the stabilizer legs back into the rack

CHAPTER 5

Cabling the Sun TCF Devices

There are three basic Sun TCF configurations, based on the number of base racks in the system:

- One base rack with one or more expansion racks.
- Two base racks with one or more expansion racks per base rack.
- Three or more base racks with a star rack and one or two expansion racks per base rack.

The following sections containing diagrams for example configurations:

- Section 5.1 “Small Farm Configuration Example” on page 5-1
- Section 5.2 “Medium Farm Configuration Example 1” on page 5-15
- Section 5.3 “Medium Farm Configuration Example 2” on page 5-27
- Section 5.4 “Large Farm Configuration Example” on page 5-34

5.1 Small Farm Configuration Example

This example of a Sun TCF small farm configuration provides 52 CPUs through thirteen 4-way compute engines. Four of the thirteen compute engines are located in the base rack and the remaining nine compute engines are mounted in the expansion rack.

FIGURE 5-1 illustrates this small farm configuration. FIGURE 5-2 is a schematic showing the cabling requirements for the small farm configuration. TABLE 5-1 lists the point-to-point cabling scheme for connections within the base rack. TABLE 5-2 lists the point-to-point cabling scheme for connections between the base rack and the expansion rack.

The following sections describe cabling configurations for specific rackmounted equipment within each rack.

- Section 5.1.1 “Cabling the Disk Array for the Small Farm Configuration” on page 5-7
- Section 5.1.2 “Cabling the File Server for the Small Farm Configuration” on page 5-9
- Section 5.1.3 “Cabling the Compute Engine for the Small Farm Configuration” on page 5-11
- Section 5.1.4 “Cabling the C3524 Ethernet Switch for the Small Farm Configuration” on page 5-12
- Section 5.1.5 “Cabling the Access Server for Small Farm Configuration” on page 5-14

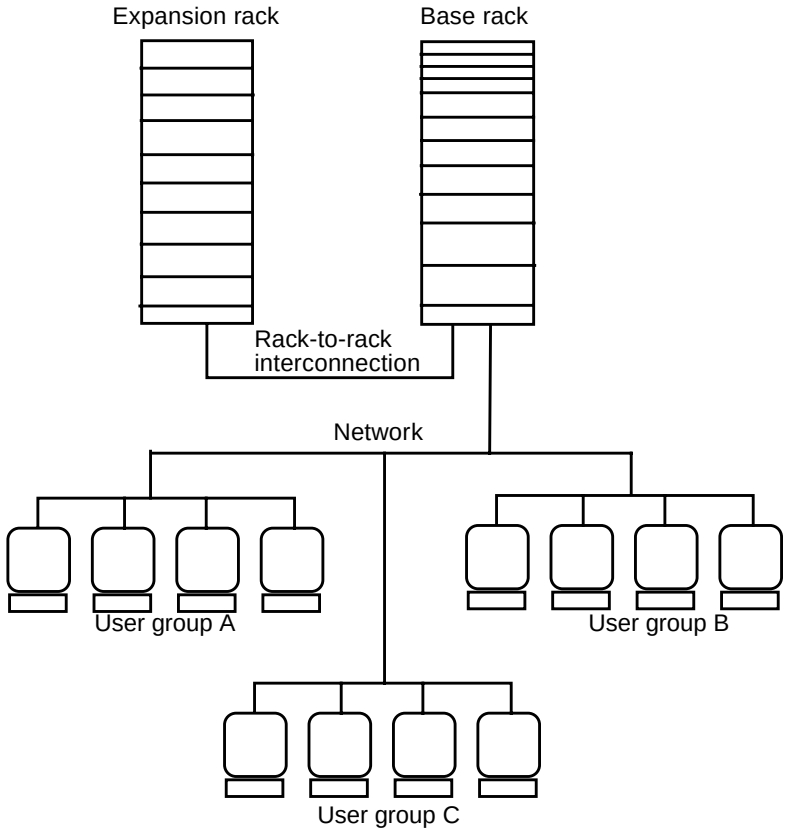


FIGURE 5-1 Example of a Sun TCF Small Farm Configuration With One Base Rack

TABLE 5-1 Point-to-Point Connections Within the Base Rack

Cable type	Connection Point 1	Connection Point 2
Fibre Channel	File server, GigabitEthernet card in the 66-MHz/64-bit PCI card slot 1	C3524 Ethernet switch, module in Gigabit slot 1
Fibre Channel	File server, host adapter card in the 33-MHz/64-bit PCI card slot 2	Disk array 1, interface board A in slot A0
Fibre Channel	File server, host adapter card in the 33-MHz/64-bit PCI card slot 3	Disk array 1, interface board B in slot B0
Ethernet	File server, serial port A	Access server 1, async port 1
Ethernet	Compute engine 1, serial port A	Access server 1, async port 2
Ethernet	Compute engine 2, serial port A	Access server 1, async port 3

TABLE 5-1 Point-to-Point Connections Within the Base Rack *(Continued)*

Cable type	Connection Point 1	Connection Point 2
Ethernet	Compute engine 3, serial port A	Access server 1, async port 4
Ethernet	Compute engine 4, serial port A	Access server 1, async port 5
Ethernet	FS, TP connector	C3524 Ethernet switch, 10/100 switch 1
Ethernet	Compute engine 1, TP connector	C3524 Ethernet switch, 10/100 switch 3
Ethernet	Compute engine 2, TP connector	C3524 Ethernet switch, 10/100 switch 5
Ethernet	Compute engine 3, TP connector	C3524 Ethernet switch, 10/100 switch 7
Ethernet	Compute engine 4, TP connector	C3524 Ethernet switch, 10/100 switch 9
Ethernet	Access server 1, Ethernet AUI port	Building network
Ethernet[1]	Access server 1, console port	System console
Ethernet	C3524 Ethernet switch, 10/100 switch 24[2]	Building network or any router/switch that allows Telnet access

1. The Ethernet cable connection that is made to the serial port A connector on the system console is made through a Cisco serial port adapter connector and a Sun Ethernet cable.

2. Roll-over cable, used in C3524 Ethernet switch-to-C3524 Ethernet switch connection.

TABLE 5-2 Point-to-Point Connections Between the Base Rack and the Expansion Rack

Cable type	Connection Point 1	Connection Point 2
Ethernet	Expansion rack, compute engine 1, serial port A	Base rack, access server 1, async port 6
Ethernet	Expansion rack, compute engine 2, serial port A	Base rack, access server 1, async port 7
Ethernet	Expansion rack, compute engine 3, serial port A	Base rack, access server 1, async port 8
Ethernet	Expansion rack, compute engine 4, serial port A	Base rack, access server 1, async port 9
Ethernet	Expansion rack, compute engine 5, serial port A	Base rack, access server 1, async port 10
Ethernet	Expansion rack, compute engine 6, serial port A	Base rack, access server 1, async port 11
Ethernet	Expansion rack, compute engine 7, serial port A	Base rack, access server 1, async port 12
Ethernet	Expansion rack, compute engine 8, serial port A	Base rack, access server 1, async port 13
Ethernet	Expansion rack, compute engine 9, serial port A	Base rack, access server 1, async port 14

TABLE 5-2 Point-to-Point Connections Between the Base Rack and the Expansion Rack

Cable type	Connection Point 1	Connection Point 2
Ethernet	Expansion rack, compute engine 1, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 2
Ethernet	Expansion rack, compute engine 2, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 4
Ethernet	Expansion rack, compute engine 3, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 6
Ethernet	Expansion rack, compute engine 4, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 8
Ethernet	Expansion rack, compute engine 5, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 10
Ethernet	Expansion rack, compute engine 6, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 12
Ethernet	Expansion rack, compute engine 7, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 14
Ethernet	Expansion rack, compute engine 8, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 16
Ethernet	Expansion rack, compute engine 9, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 18

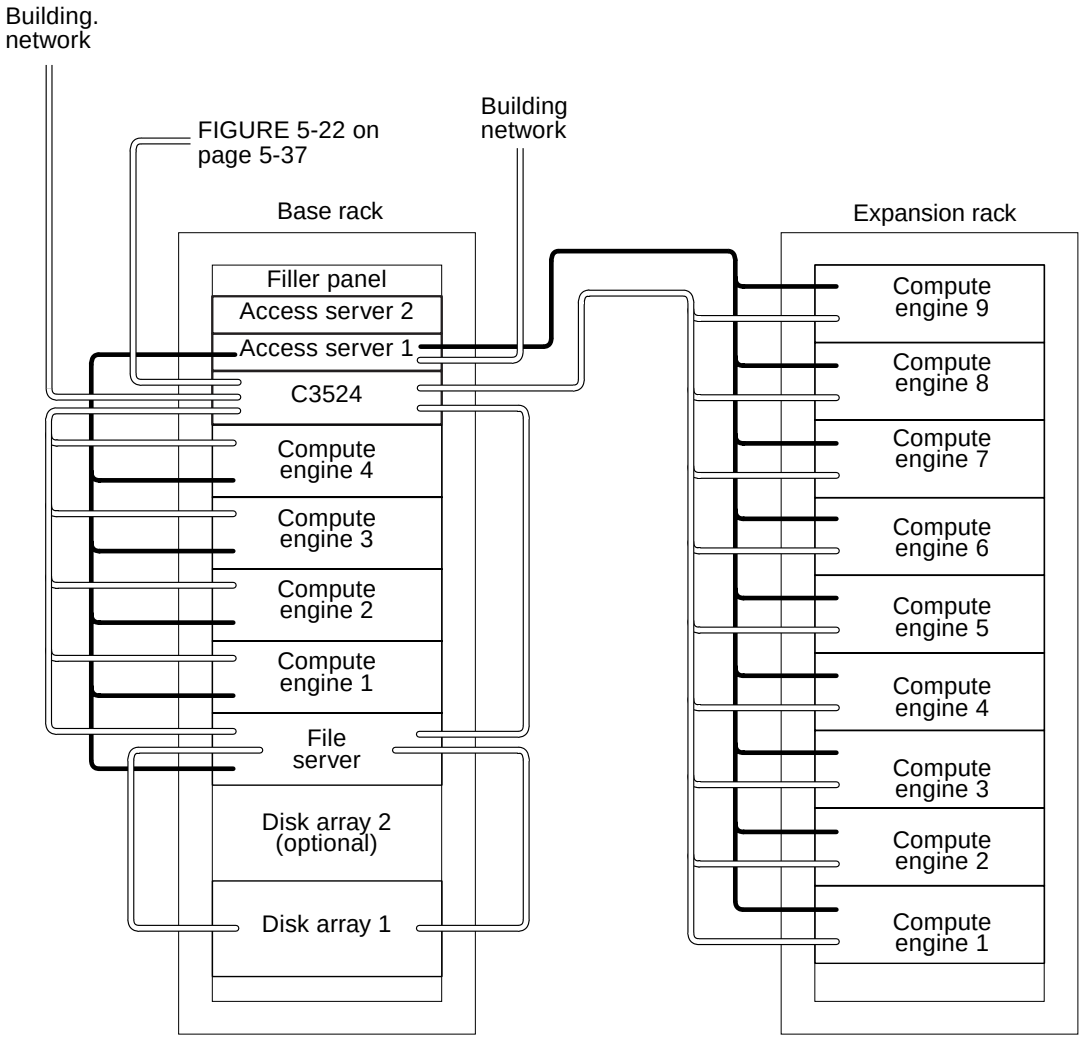


FIGURE 5-2 Small Farm Configuration Schematic Drawing

5.1.1 Cabling the Disk Array for the Small Farm Configuration

Note – For complete information on configuring the disk array, refer to the *Sun StorEdge A5000 Configuration Guide*.

With the small farm configuration, a single disk array, designated disk array 1, provides high-availability internal mirroring mass storage for the Sun TCF small farm configuration. As an option, a second disk array, designated disk array 2, may be installed into the base rack to allow external mirroring mass storage.

As shown in FIGURE 5-3, the disk array has four ports: A0, A1, B0, and B1.

- A and B are the two data paths to the dual-ported disk drives. Each disk array interface board (IB) connects to either the A or B loop.
- 0 and 1 are the two gigabit interface converter (GBIC) connections to the loops on each interface board.

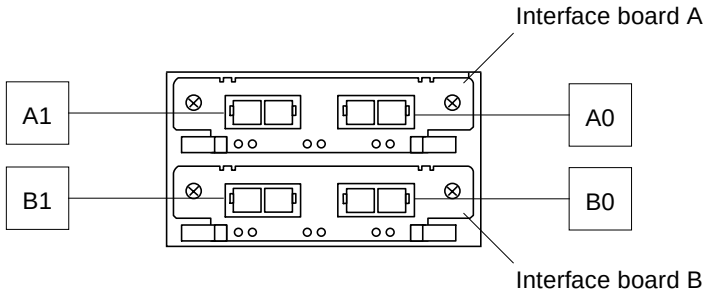


FIGURE 5-3 Disk Array Ports

5.1.1.1 Disk Array 1-to-File Server Cabling

TABLE 5-1 on page 5-3 lists the point-to-point cabling scheme for connections between disk array 1 and the file server. FIGURE 5-4 shows the cabling scheme for disk array 1.

Note – Fiber optic cable connectors are keyed to prevent improper insertion.

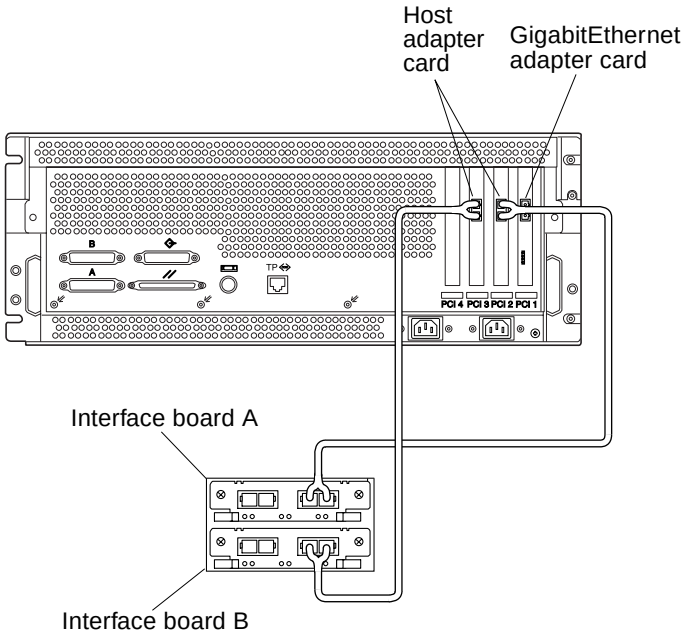


FIGURE 5-4 Disk Array 1-to-File Server Cabling

5.1.1.2 Point-to-Point Cabling With Second Disk Array Installed

If a second disk array is installed into the base rack, disregard the previous disk array 1-to-file server cabling procedure and refer to Section 5.4.1 “Cabling the Disk Array for the Large Farm Configuration” on page 5-39.

5.1.2 Cabling the File Server for the Small Farm Configuration

With the small farm configuration, the file server manages the computational functions of the Sun TCF. It has one GigabitEthernet adapter card installed in PCI slot 1 and two host adapter cards installed in PCI slots 2 and 3, respectively.

TABLE 5-1 on page 5-3 lists the point-to-point cabling scheme for the file server and FIGURE 5-5 shows the cabling scheme for the file server.

Note – The Ethernet cable connection that is made to the serial port A connector on the file server is made through a Cisco serial port adapter connector.

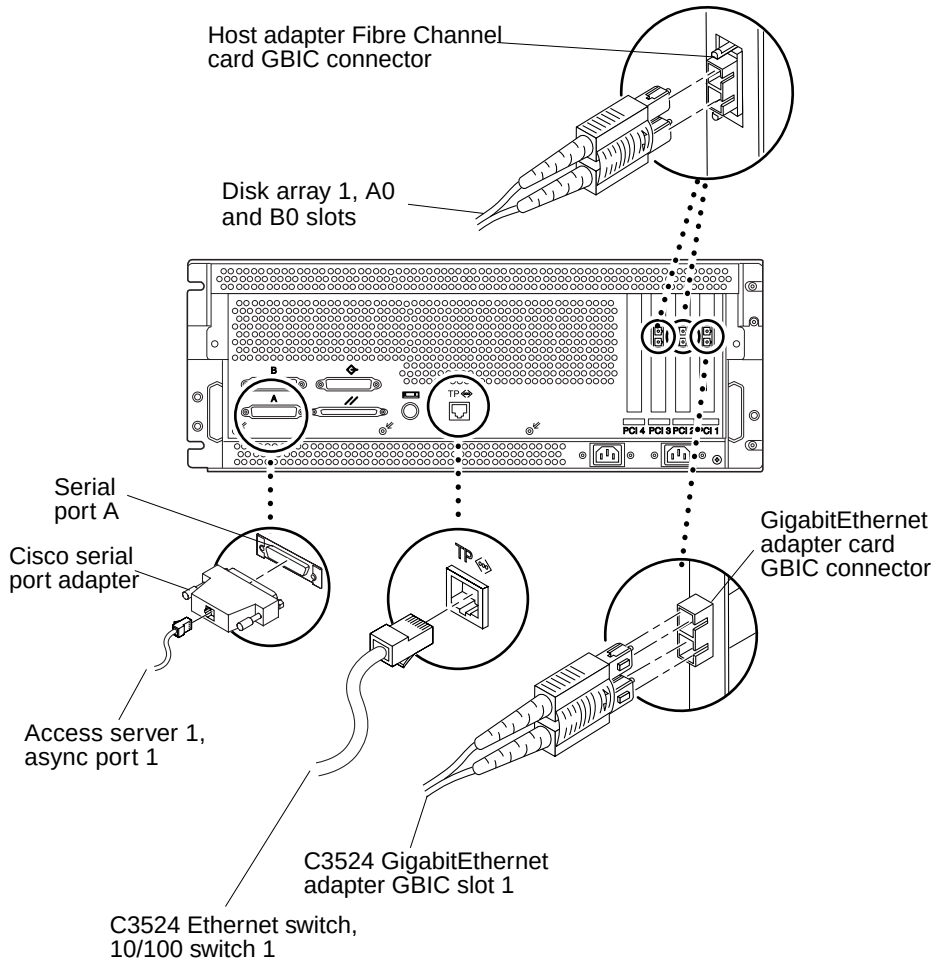


FIGURE 5-5 Cabling the File Server for the Small Farm Configuration

5.1.3 Cabling the Compute Engine for the Small Farm Configuration

With the small farm configuration, the compute farm receives control and direction from the file server. In response, the compute engine provides data transmissions between the file server and the end-user workstation.

TABLE 5-1 on page 5-3 lists the point-to-point cabling scheme between the base rack and the expansion rack. TABLE 5-2 on page 5-4 lists the point-to-point connection between the base rack and the expansion rack for the compute engines. FIGURE 5-6 shows the cabling scheme for the base rack compute engines and FIGURE 5-7 shows the cabling scheme for the expansion rack compute engines.

Note – The Ethernet cable connection that is made at the serial port A connector on the compute engine is connected through a Cisco serial port adapter connector.

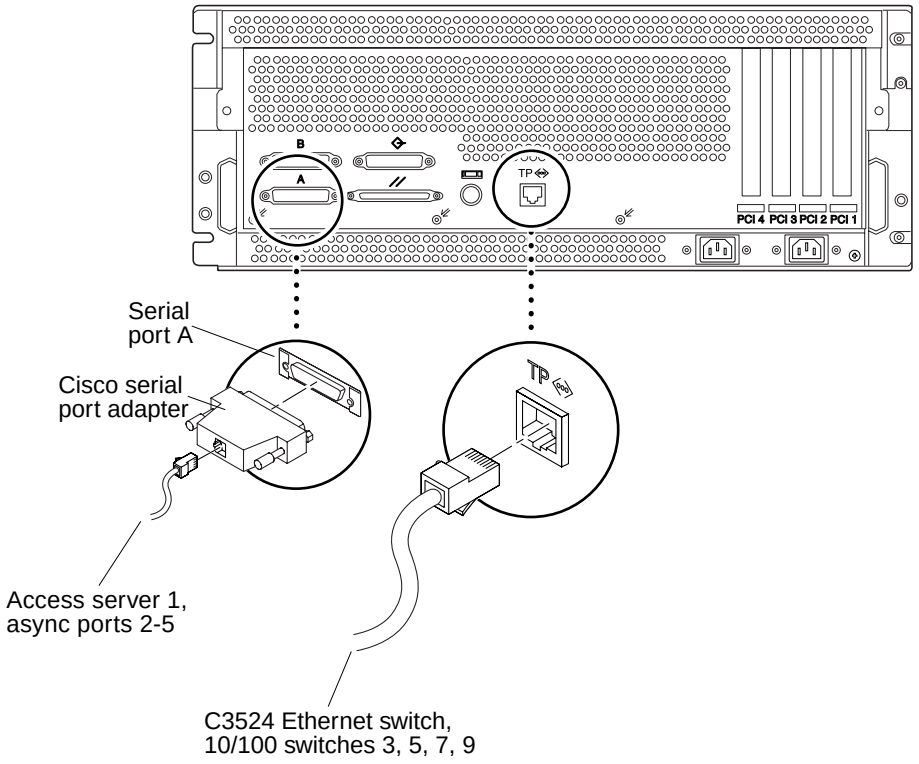


FIGURE 5-6 Cabling the Base Rack Compute Engine for the Small Farm Configuration

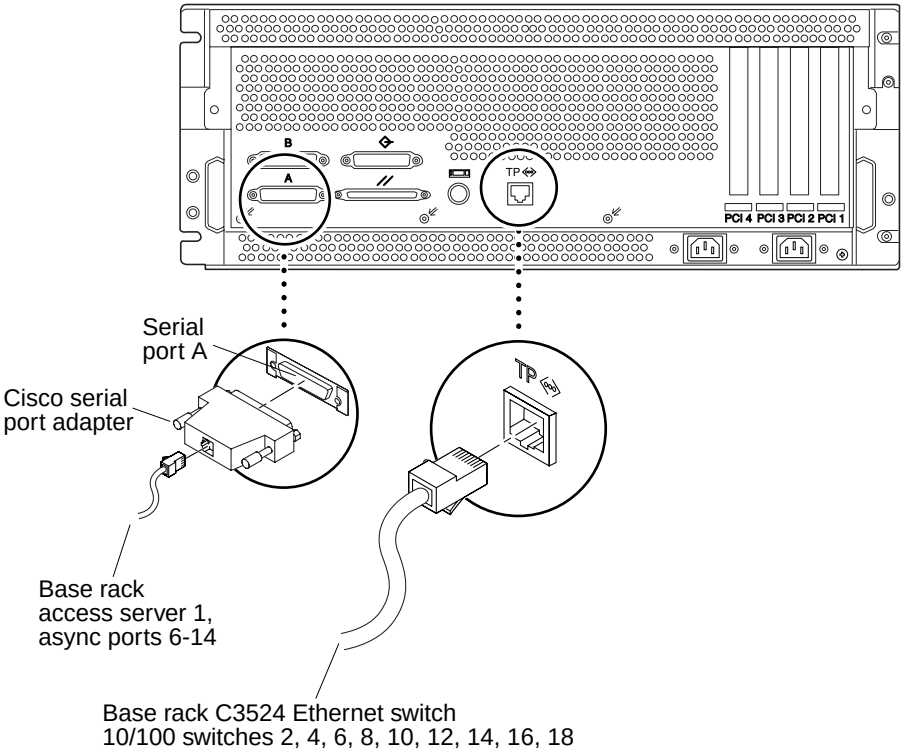


FIGURE 5-7 Cabling the Expansion Rack Compute Engine for the Small Farm Configuration

5.1.4 Cabling the C3524 Ethernet Switch for the Small Farm Configuration

With the small farm configuration, the C3524 Ethernet switch supplies Gigabit Ethernet and autosensing 10BASE-T or 100BASE-TX connections in individual switches and in clustered configurations.

TABLE 5-1 on page 5-3 lists the point-to-point cabling scheme between the base rack and the expansion rack. TABLE 5-2 on page 5-4 lists the point-to-point connection between the base rack and the expansion rack for the C3524 Ethernet switch. FIGURE 5-8 shows the cabling scheme for the C3524 Ethernet switch.

Refer to FIGURE 1-13 on page 1-17 for the C3524 Ethernet switch port assignments.

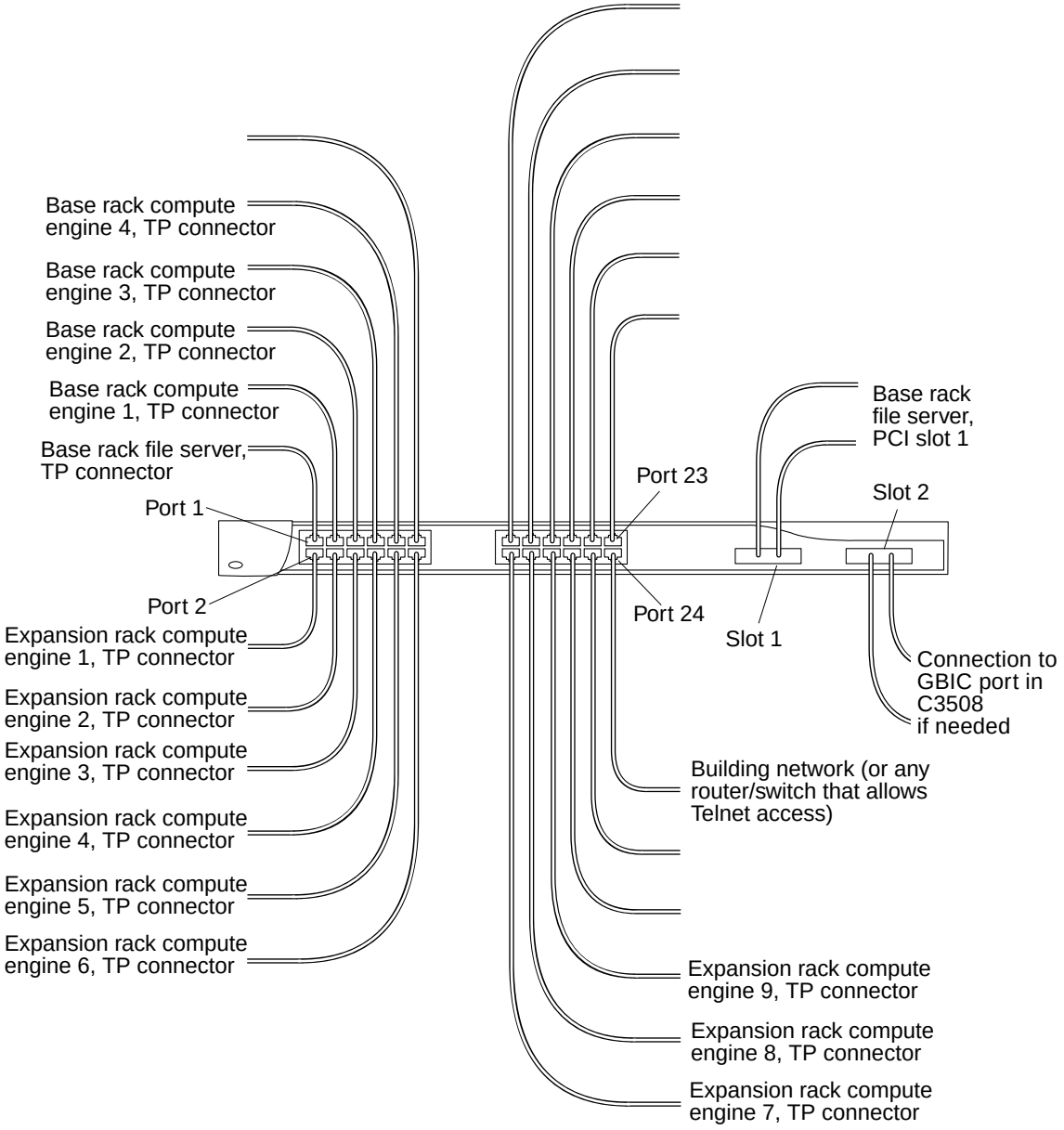


FIGURE 5-8 Cabling the C3524 Ethernet Switch for the Small Farm Configuration

5.1.5 Cabling the Access Server for Small Farm Configuration

With the small farm configuration, access server 1 connects asynchronous serial devices to local area networks (LANs) and wide area networks (WANs).

TABLE 5-1 on page 5-3 lists the point-to-point cabling scheme between the base rack and the expansion rack. TABLE 5-2 on page 5-4 lists the point-to-point connection between the base rack and the expansion rack for access server 1. FIGURE 5-9 shows the cabling scheme for the base rack access server 1.

Refer to FIGURE 1-18 on page 1-20 for the access server port assignments.

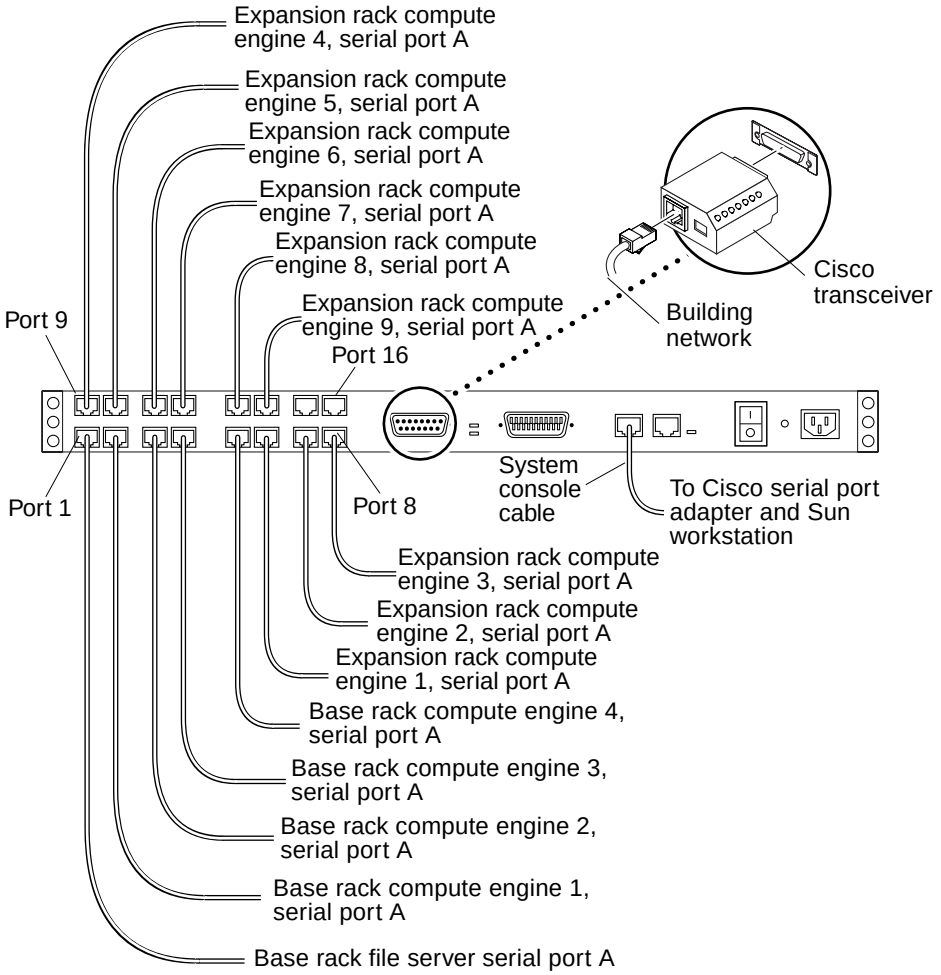


FIGURE 5-9 Cabling Access Server 1 for the Small Farm Configuration

5.2 Medium Farm Configuration Example 1

The Sun TCF medium farm configuration example 1 uses two expansion racks (designated as expansion racks 1 and 2) and one base rack. Each expansion rack contains nine 4-way compute engines. Expansion rack 1 is electrically connected to the base rack through access server 1. Expansion rack 2 is electrically connected to the base rack through access sever 2.

FIGURE 5-10 illustrates a medium farm configuration example 1. FIGURE 5-11 and FIGURE 5-12 are schematics showing the cabling requirements for the medium farm configuration example 1. With the exception of the point-to-point cabling differences between the base rack and expansion rack 2, all other point-to-point cabling for this medium farm configuration is identical to the small farm point-to-point cabling scheme (refer to TABLE 5-2 on page 5-4). TABLE 5-3 lists the point-to-point cabling scheme between the base rack and expansion rack 2.

The following sections describe cabling configurations for the individually rackmounted equipment for the 88-CPU medium farm configuration.

- Section 5.2.1 “Cabling the Disk Array for the Medium Farm Configuration Example 1” on page 5-21
- Section 5.2.2 “Cabling the File Server for the Medium Farm Configuration Example 1” on page 5-21
- Section 5.2.3 “Cabling the Compute Engines for the Medium Farm Configuration Example 1” on page 5-21
- Section 5.2.4 “Cabling the C3524 Ethernet Switch for the Medium Farm Configuration Example 1” on page 5-23
- Section 5.2.5 “Cabling the Access Server 2 for the Medium Farm Configuration Example 1” on page 5-25

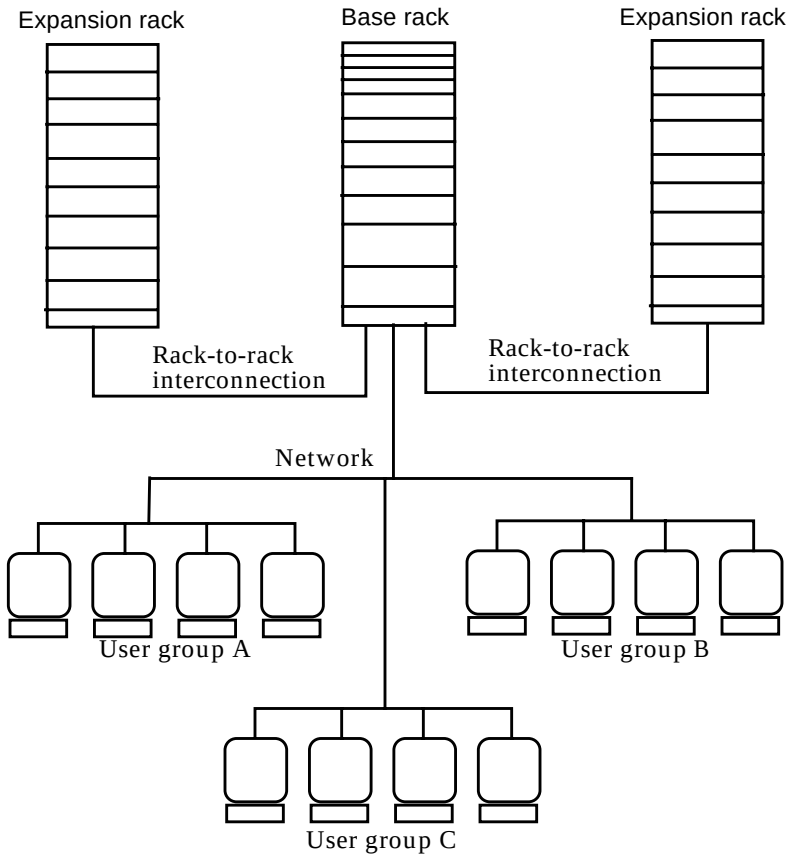


FIGURE 5-10 Example 1 of a Sun TCF Medium Farm Configuration With One Base Rack

TABLE 5-3 Point-to-Point Connections Between the Base Rack and Expansion Rack 2

Cable type	Connection Point 1	Connection Point 2
Ethernet	Expansion rack 2, compute engine 1, serial port A	Base rack, access server 2, async port 1
Ethernet	Expansion rack 2, compute engine 2, serial port A	Base rack, access server 2, async port 2
Ethernet	Expansion rack 2, compute engine 3, serial port A	Base rack, access server 2, async port 3
Ethernet	Expansion rack 2, compute engine 4, serial port A	Base rack, access server 2, async port 4
Ethernet	Expansion rack 2, compute engine 5, serial port A	Base rack, access server 2, async port 5

TABLE 5-3 Point-to-Point Connections Between the Base Rack and Expansion Rack 2

Cable type	Connection Point 1	Connection Point 2
Ethernet	Expansion rack 2, compute engine 6, serial port A	Base rack, access server 2, async port 6
Ethernet	Expansion rack 2, compute engine 7, serial port A	Base rack, access server 2, async port 7
Ethernet	Expansion rack 2, compute engine 8, serial port A	Base rack, access server 2, async port 8
Ethernet	Expansion rack 2, compute engine 9, serial port A	Base rack, access server 2, async port 9
Ethernet	Expansion rack 2, compute engine 1, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 11
Ethernet	Expansion rack 2, compute engine 2, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 13
Ethernet	Expansion rack 2, compute engine 3, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 15
Ethernet	Expansion rack 2, compute engine 4, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 17
Ethernet	Expansion rack 2, compute engine 5, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 19
Ethernet	Expansion rack 2, compute engine 6, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 21
Ethernet	Expansion rack 2, compute engine 7, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 23
Ethernet	Expansion rack 2, compute engine 8, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 20
Ethernet	Expansion rack 2, compute engine 9, TP connector	Base rack, C3524 Ethernet switch, 10/100 switch 22

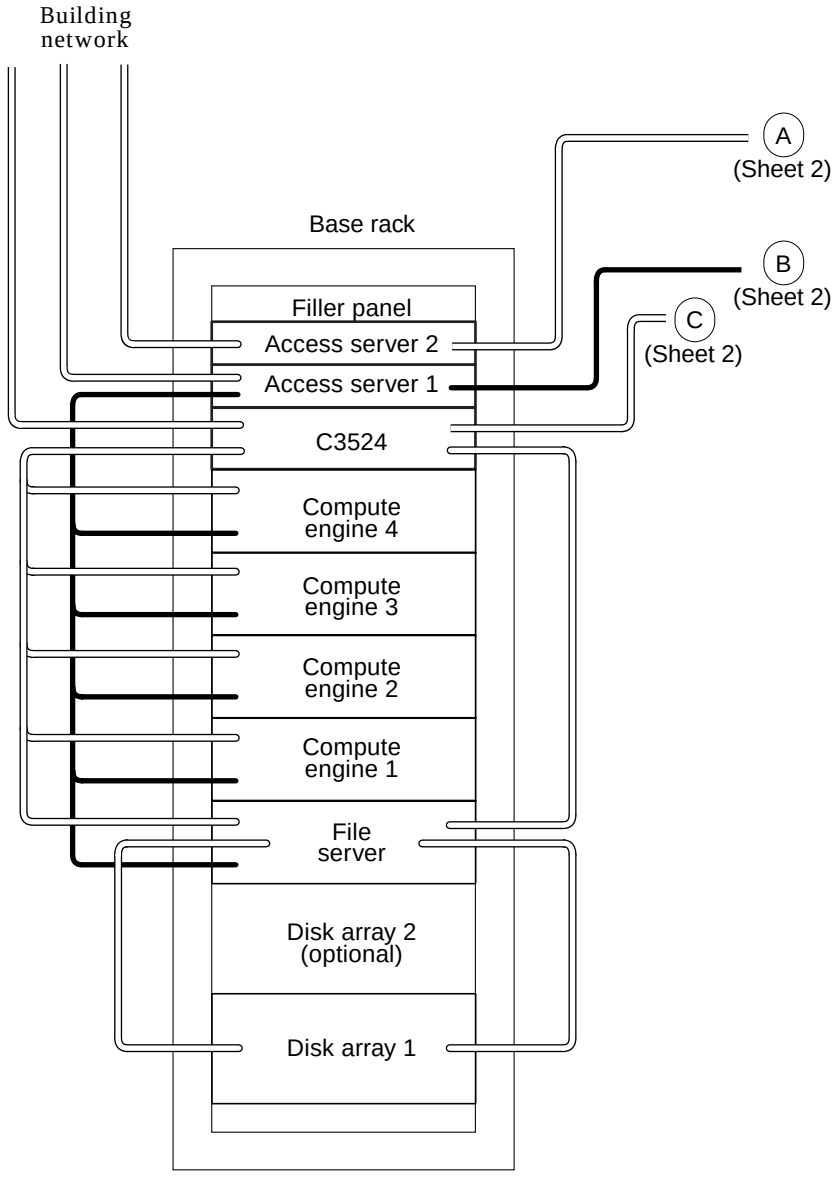


FIGURE 5-11 Medium Farm Configuration Example 1 (Sheet 1 of 2)

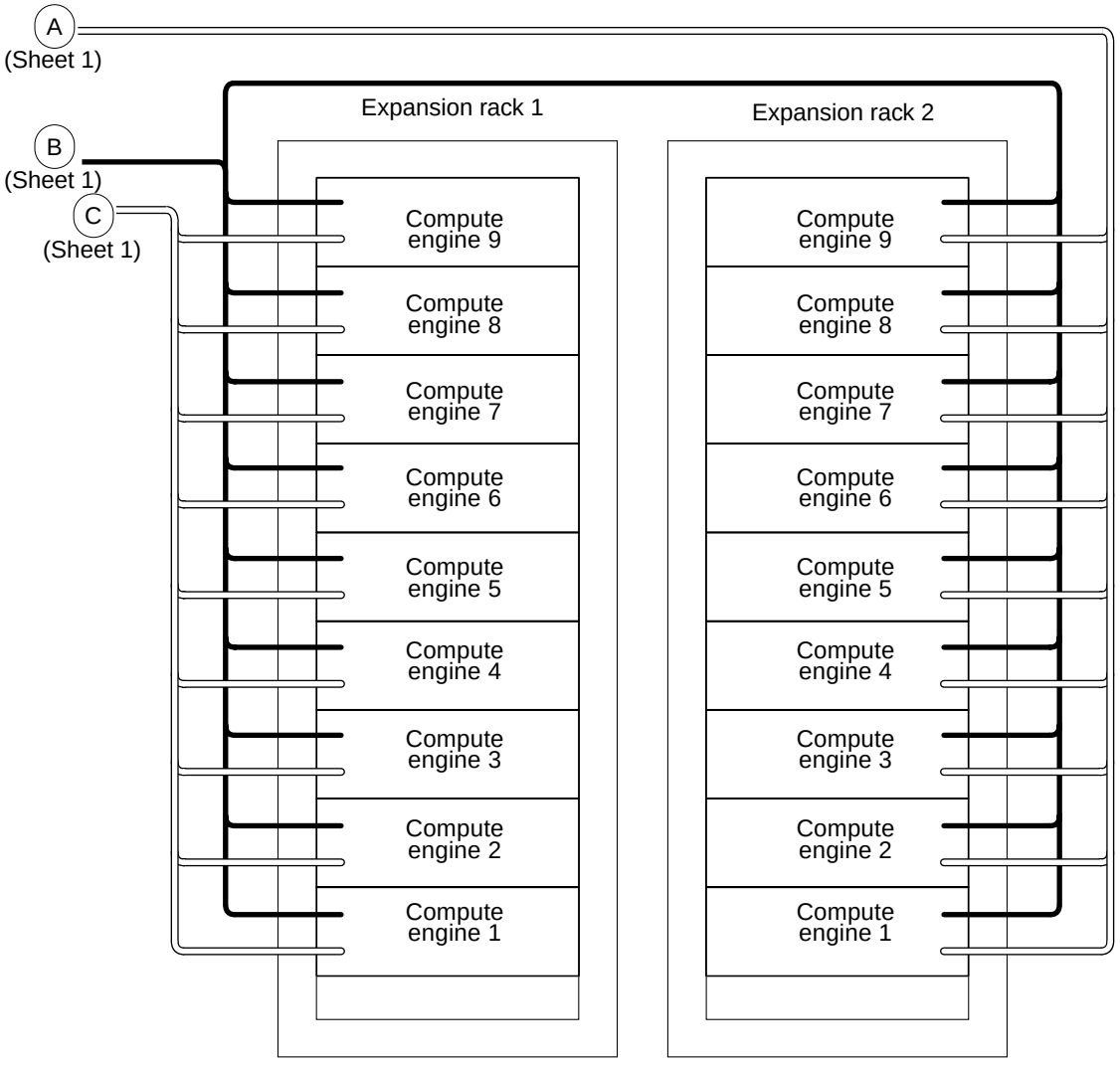


FIGURE 5-12 Medium Farm Configuration Example 1 (Sheet 2 of 2)

5.2.1 Cabling the Disk Array for the Medium Farm Configuration Example 1

Note – For complete information on configuring the disk array, refer to the *Sun StorEdge A5000 Configuration Guide*.

With the medium farm configuration example 1, the cabling scheme for the disk array(s) are identical to the disk array cabling scheme for the Sun TCF small farm configuration. Refer to Section 5.1.1 “Cabling the Disk Array for the Small Farm Configuration” on page 5-7.

5.2.2 Cabling the File Server for the Medium Farm Configuration Example 1

With the medium farm configuration example 1, the cabling scheme for the file server is identical to the file server cabling scheme for the Sun TCF small farm configuration. Refer to Section 5.1.2 “Cabling the File Server for the Small Farm Configuration” on page 5-9.

5.2.3 Cabling the Compute Engines for the Medium Farm Configuration Example 1

With the medium farm configuration example 1, the compute farm receives control and direction from the file server. In response, the compute engine provides data transmissions between the file server and the end-user workstation.

The cabling scheme for the compute engines in expansion rack 1 is identical to the compute engine cabling scheme for the Sun TCF small farm configuration (refer to FIGURE 5-6 on page 5-11). FIGURE 5-13 shows the cabling scheme for the compute engines in expansion rack 2.

Note – The Ethernet cable connection that is made at the serial port A connector on the file server is connected through a Cisco serial port adapter connector.

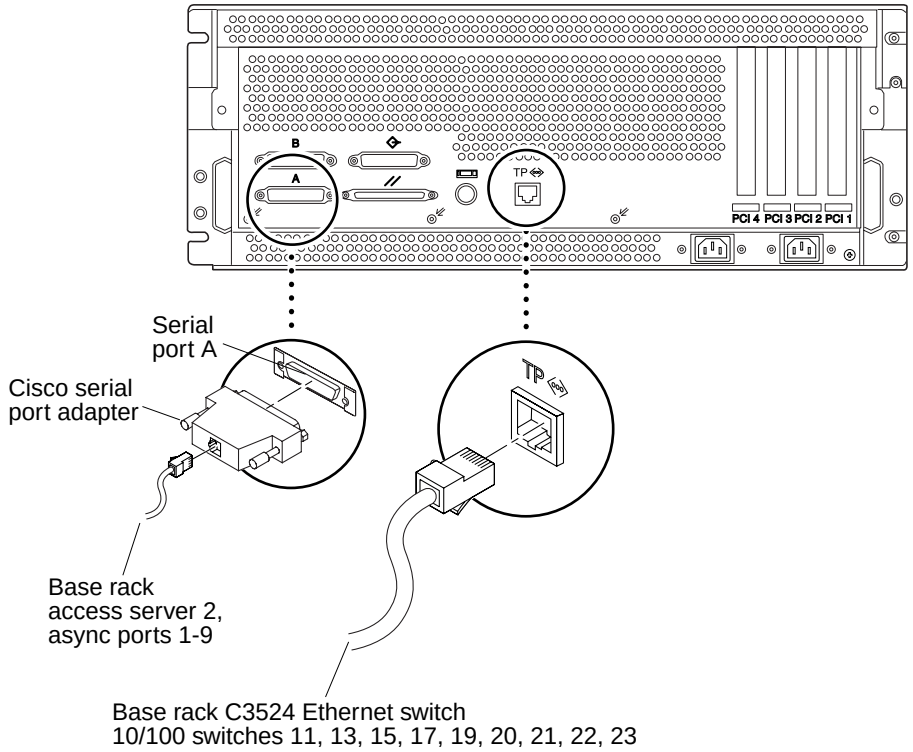


FIGURE 5-13 Cabling the Expansion Rack 2 Compute Engine for the Medium Farm Configuration Example 1

5.2.4 Cabling the C3524 Ethernet Switch for the Medium Farm Configuration Example 1

With the medium farm configuration example 1, the cabling scheme for the C3524 is identical to the C3524 cabling scheme for the small farm configuration (refer to Section 5.1.4 “Cabling the C3524 Ethernet Switch for the Small Farm Configuration” on page 5-12). In addition, the C3524 Ethernet switch also electrically connects the expansion rack 2 compute engines to the base rack.

TABLE 5-3 on page 5-17 lists the point-to-point cabling scheme between the base rack’s C3524 Ethernet switch and the compute engines in expansion rack 2. FIGURE 5-14 shows the cabling scheme for the C3524 Ethernet switch-to-expansion rack 2 compute engines.

Note – Refer to FIGURE 1-13 on page 1-17 for the C3524 Ethernet switch port assignments.

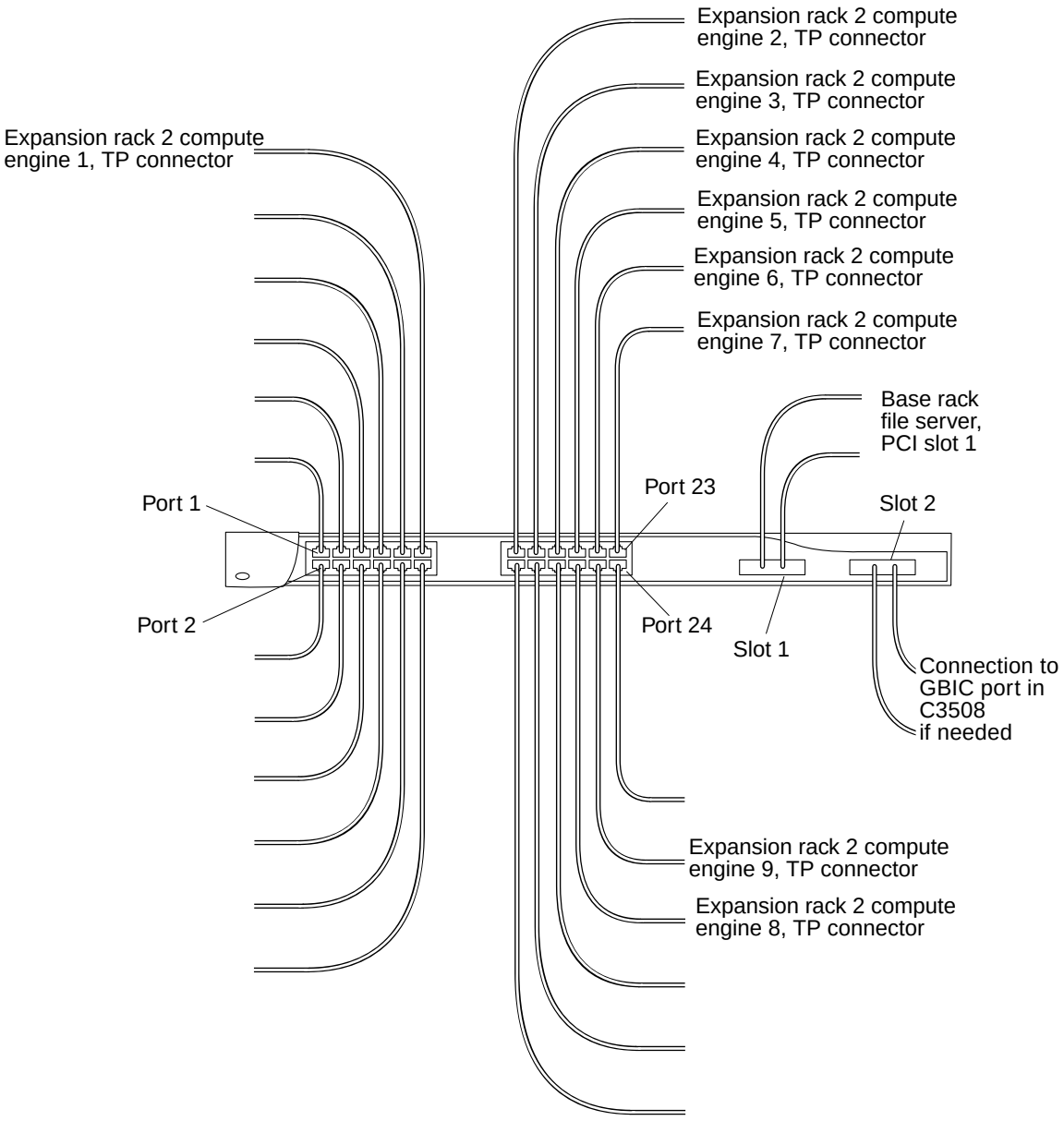


FIGURE 5-14 Cabling the C3524 Ethernet Switch for the Medium Farm Configuration Example 1

5.2.5 Cabling the Access Server 2 for the Medium Farm Configuration Example 1

With the medium farm configuration example 1, access server 2 connects the base rack to the expansion rack 2 compute engines.

TABLE 5-3 on page 5-17 lists the point-to-point connection between the base rack and the expansion rack for access server 2. FIGURE 5-15 shows the cabling scheme for the base rack access server 2.

Note – Refer to FIGURE 1-18 on page 1-20 for the C3524 Ethernet switch port assignments.

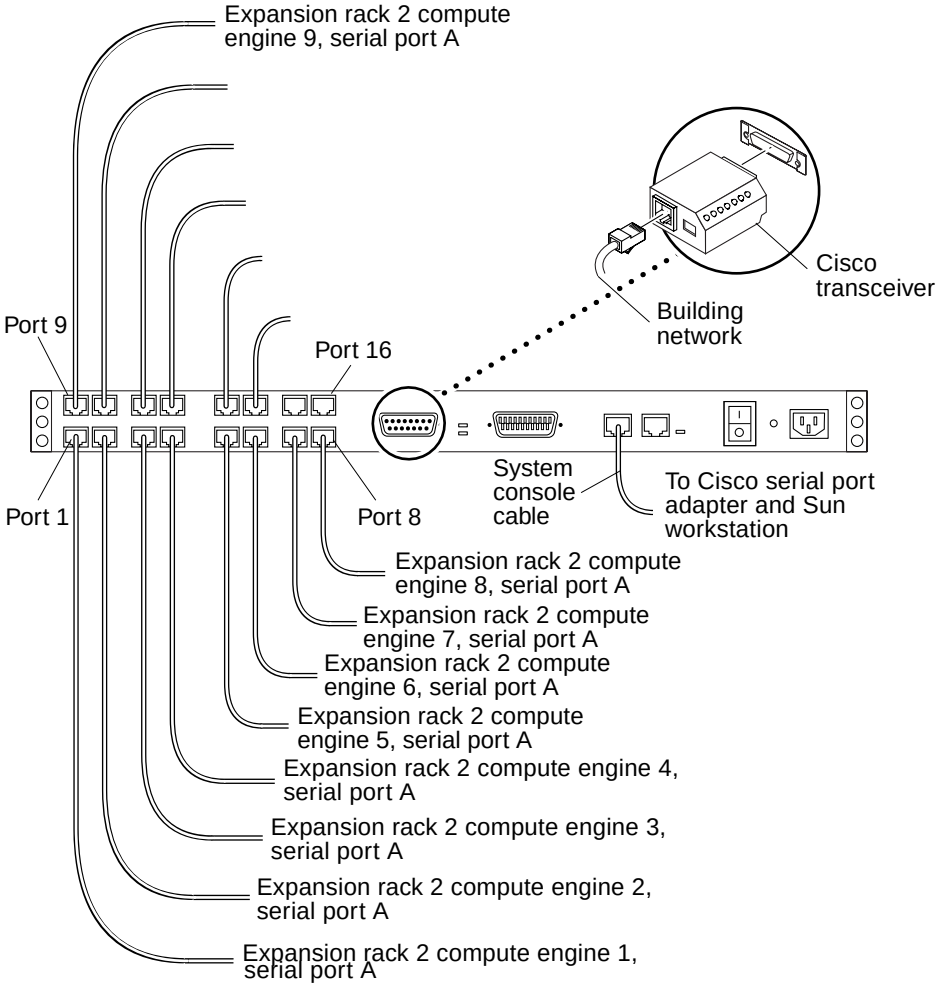


FIGURE 5-15 Cabling the Access Server 2 for the Medium Farm Configuration Example 1

5.3 Medium Farm Configuration Example 2

The Sun TCF medium farm configuration example 2 uses two expansion racks (designated as expansion racks 1 and 2) and two base racks (designated as base racks 1 and 2). One of the expansion racks contains nine 4-way compute engines and is electrically connected to base rack 1. The second expansion rack contains nine 2-way compute engines and is electrically connected to base rack 2. Each base rack is electrically connected to the other base rack in a cascading scheme through their respective C3524 Ethernet switches.

FIGURE 5-16 illustrates a medium farm configuration example 2. FIGURE 5-17 and FIGURE 5-18 are schematics showing the cabling requirements for the medium farm configuration example 2. TABLE 5-4 lists the point-to-point cabling scheme for connections between base rack 1 and base rack 2. With the exception of a point-to-point cabling difference between the C3524 Ethernet switch in each base rack, all other point-to-point cabling for this medium farm configuration is identical to the point-to-point cabling in the small farm configuration.

The following sections describe cabling configurations for the individually rackmounted equipment for the medium farm configuration example 2.

- Section 5.3.1 “Cabling the Disk Array for the Medium Farm Configuration Example 2” on page 5-31
- Section 5.3.2 “Cabling the File Server for the Medium Farm Configuration Example 2” on page 5-31
- Section 5.3.3 “Cabling the Compute Engine for the Medium Farm Configuration Example 2” on page 5-31
- Section 5.3.4 “Cabling the C3524 Ethernet Switches for the Medium Farm Configuration Example 2” on page 5-31
- Section 5.3.5 “Cabling the Access Server for the Medium Farm Configuration Example 2” on page 5-34

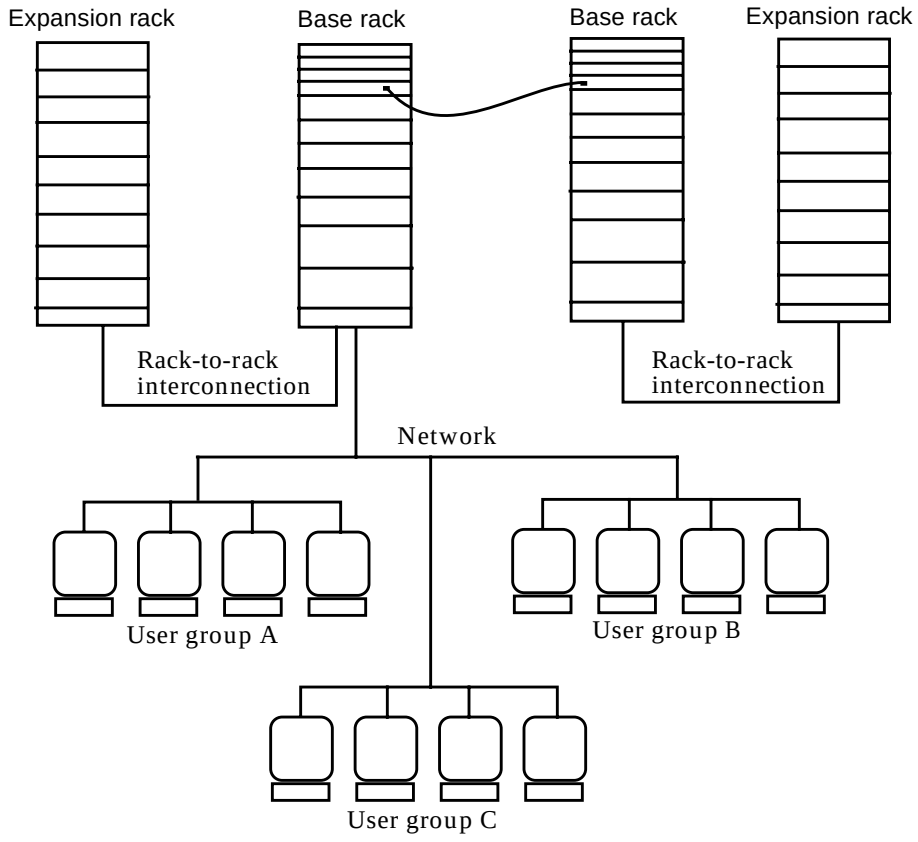


FIGURE 5-16 Example 2 of a Sun TCF Medium Farm Configuration With Two Base Racks

TABLE 5-4 Point-to-Point Connections Between the Base Racks

Cable type	Connection Point 1	Connection Point 2
Fibre Channel	Base rack 1, C3524 Ethernet switch, module in Gigabit slot 2	Base rack 2, C3524 Ethernet switch, module in Gigabit slot 2

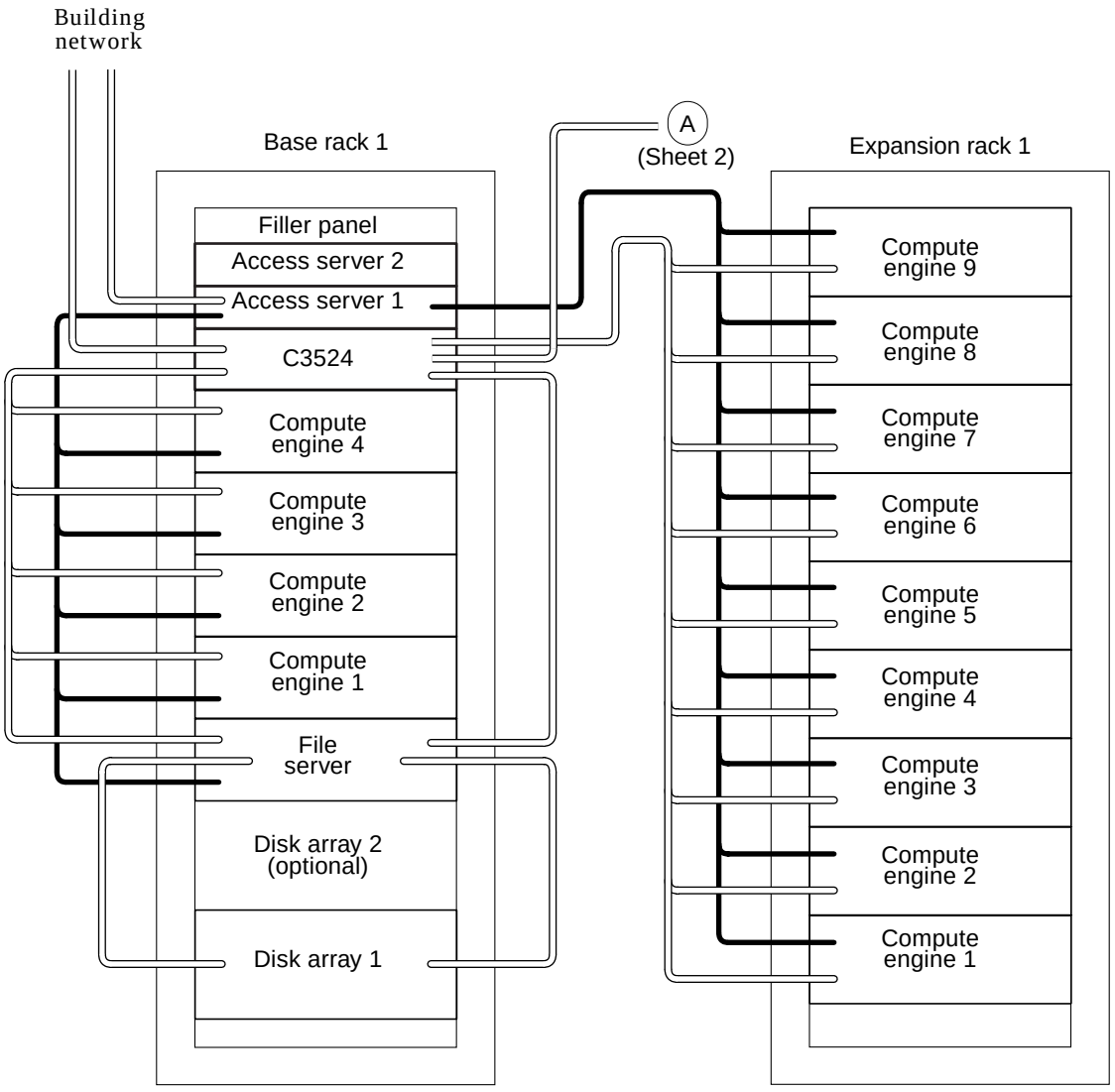


FIGURE 5-17 Medium Farm Configuration Example 2 (Sheet 1 of 2)

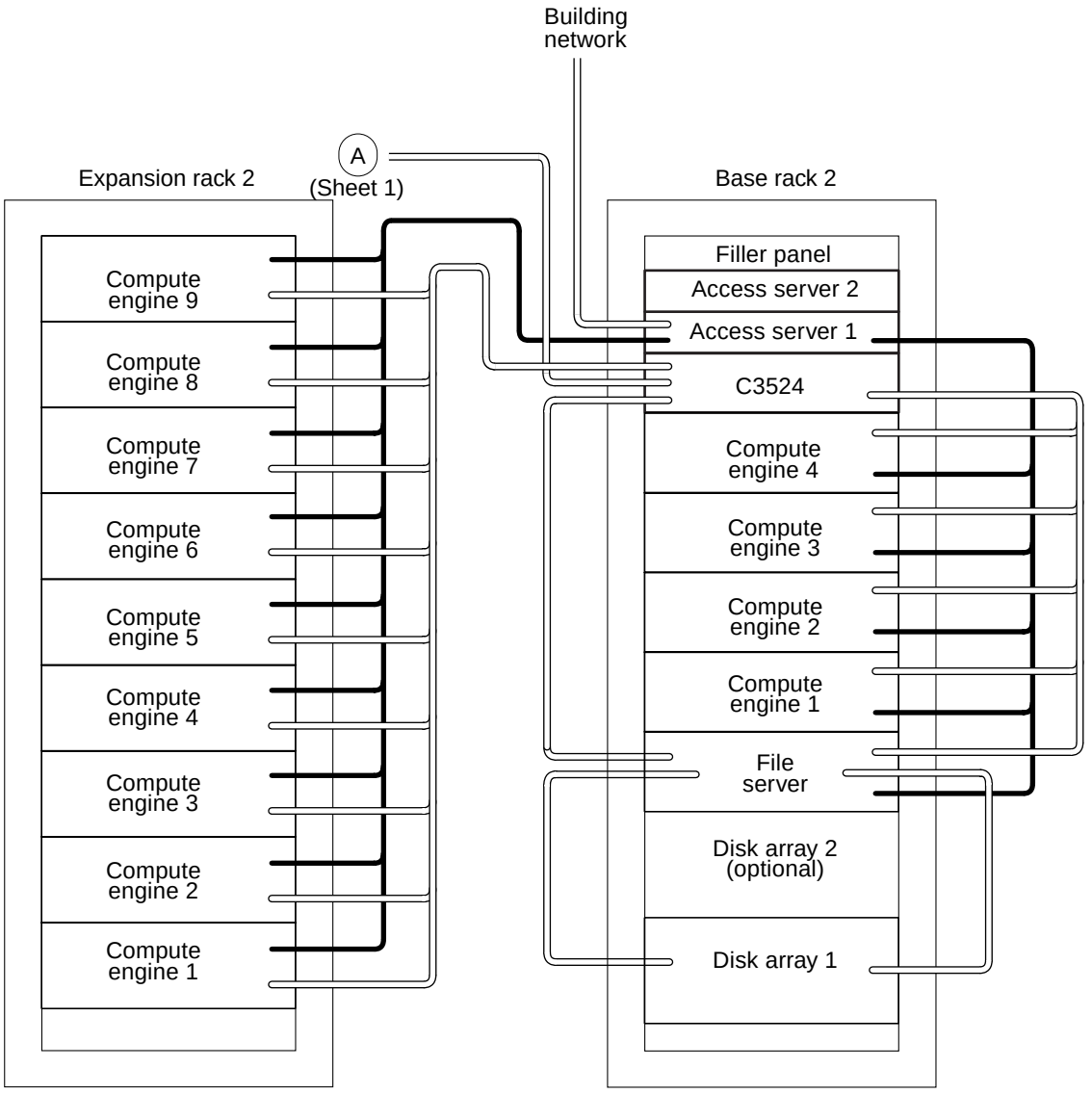


FIGURE 5-18 Medium Farm Configuration Example 2 (Sheet 2 of 2)

5.3.1 Cabling the Disk Array for the Medium Farm Configuration Example 2

Note – For complete information on configuring the disk array, refer to the *Sun StorEdge A5000 Configuration Guide*.

With the medium farm configuration example 2, the cabling scheme for the disk array(s) are identical to the disk array cabling scheme for the Sun TCF small farm configuration. Refer to Section 5.1.1 “Cabling the Disk Array for the Small Farm Configuration” on page 5-7.

5.3.2 Cabling the File Server for the Medium Farm Configuration Example 2

With the medium farm configuration example 2, the cabling scheme for the file server is identical to the file server cabling scheme for the Sun TCF small farm configuration. Refer to Section 5.1.2 “Cabling the File Server for the Small Farm Configuration” on page 5-9.

5.3.3 Cabling the Compute Engine for the Medium Farm Configuration Example 2

With the medium farm configuration example 2, the cabling scheme for the compute engine is identical to the compute engine cabling scheme for the Sun TCF small farm configuration. Refer to Section 5.1.3 “Cabling the Compute Engine for the Small Farm Configuration” on page 5-11.

5.3.4 Cabling the C3524 Ethernet Switches for the Medium Farm Configuration Example 2

With the medium farm configuration example 2, the cabling scheme for the C3524 is identical to the C3524 cabling scheme for the Sun TCF small farm configuration (refer to Section 5.1.4 “Cabling the C3524 Ethernet Switch for the Small Farm Configuration” on page 5-12) with one exception. The 86-CPU medium farm configuration requires that the two base racks and their respective expansion racks are electrically cascaded through each base rack’s C3524 Ethernet switch Gigabit Ethernet port.

TABLE 5-4 lists the point-to-point cabling scheme between each base rack's C3524 Ethernet switch. FIGURE 5-19 shows the cabling scheme for the base rack-to-base rack C3524 Ethernet switch.

Refer to FIGURE 1-13 on page 1-17 for the C3524 Ethernet switch port assignments.

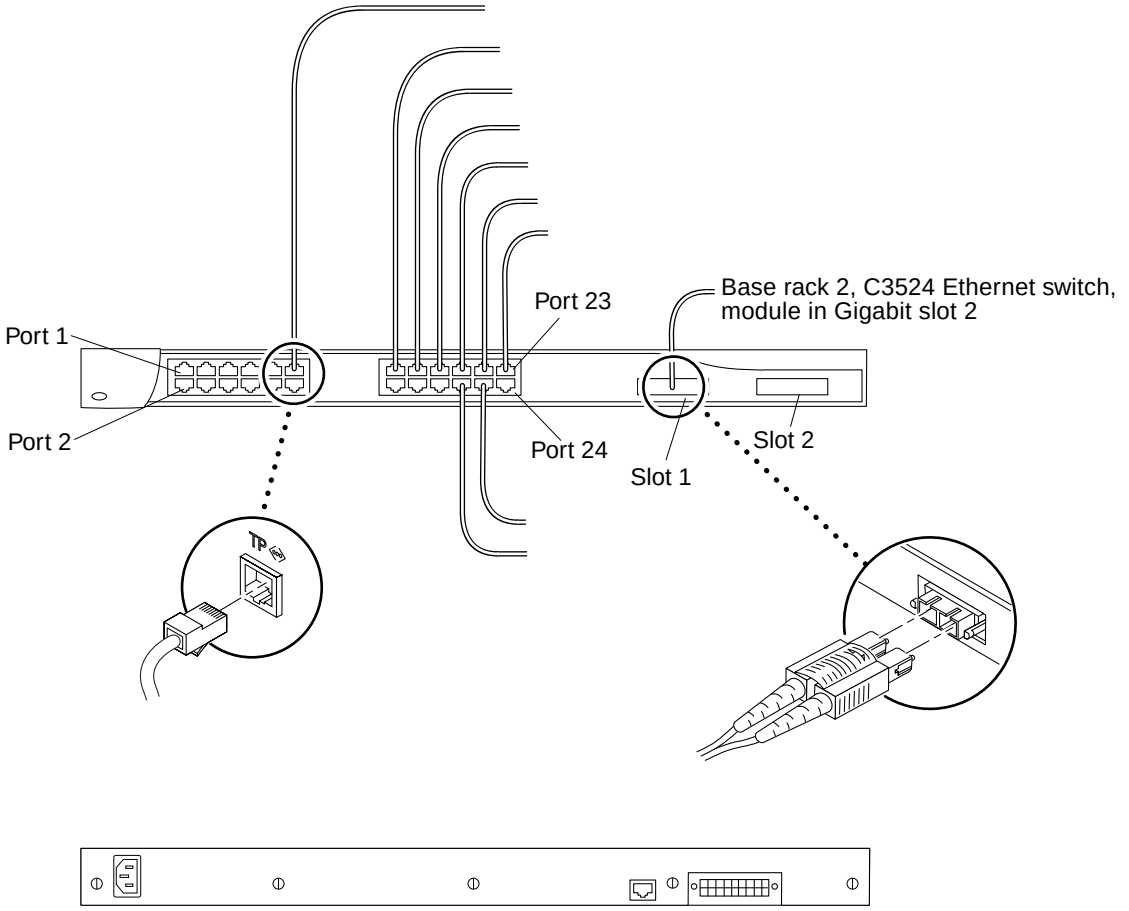


FIGURE 5-19 Cabling the Base Rack 1 C3524 Ethernet Switch for the Medium Farm Configuration Example 2

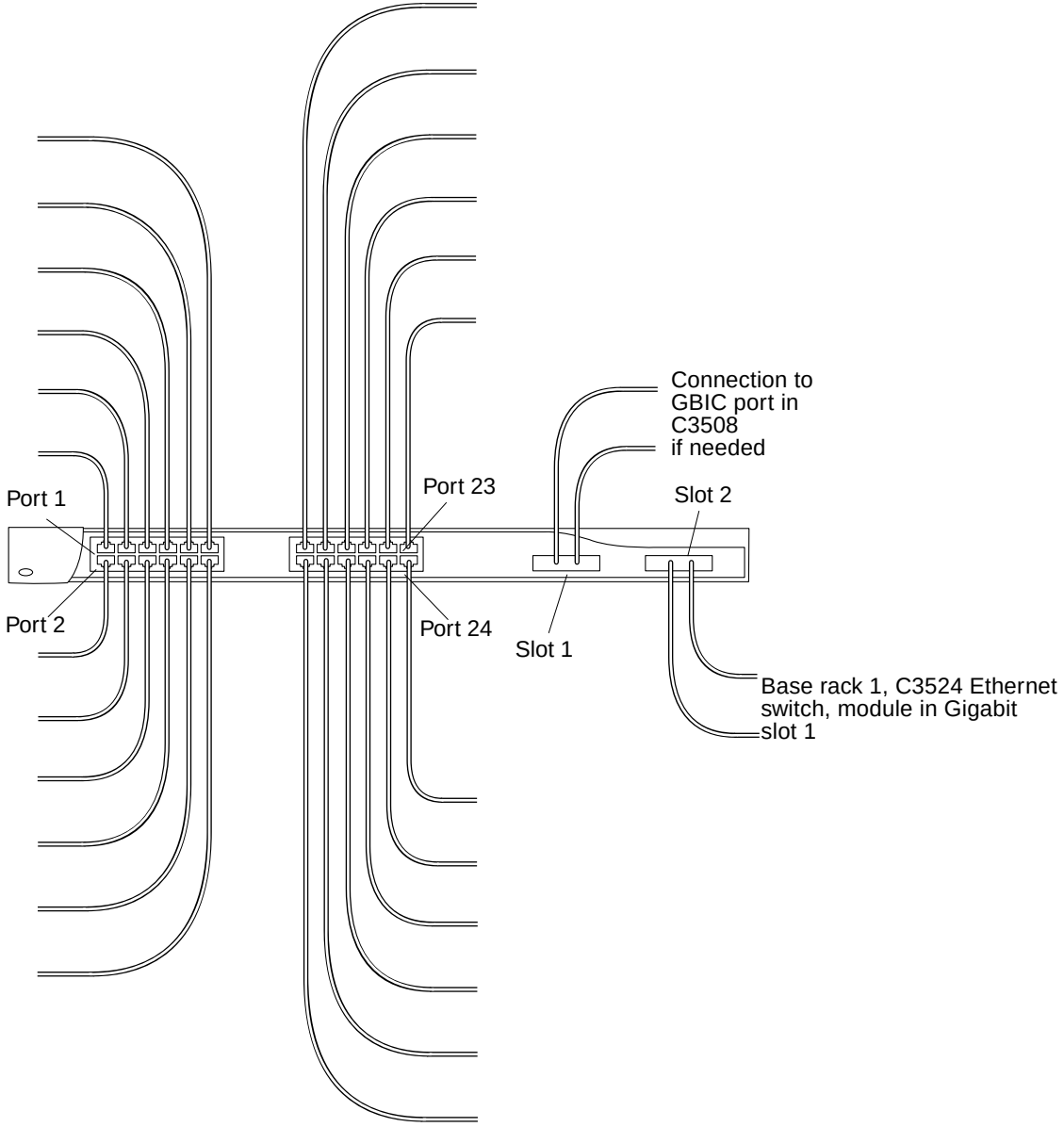


FIGURE 5-20 Cabling Base Rack 2 C3524 Ethernet Switch for the Medium Farm Configuration Example 2

5.3.5 Cabling the Access Server for the Medium Farm Configuration Example 2

With the medium farm configuration example 2, the cabling scheme for the access server 1 is identical to the access server 1 cabling scheme for the Sun TCF small farm configuration. Refer to Section 5.1.5 “Cabling the Access Server for Small Farm Configuration” on page 5-14.

5.4 Large Farm Configuration Example

The Sun TCF large farm configuration connects either the small farm configuration or the medium farm configuration example 1 to a star rack. Up to three small farm configurations or medium farm configuration example 1 (or a combination thereof) may be connected to the star rack to form a large farm configuration.

Note – When configured in the large farm configuration, each small farm base rack or each medium farm base rack is designated as base rack 1, 2, or 3.

FIGURE 5-22 is a schematic showing the cabling requirements for the large farm configuration. With the exception of the point-to-point cabling differences with the star rack C3508 Ethernet switch and the two disk arrays, all other point-to-point cabling for the large farm configuration is identical to the small farm point-to-point cabling scheme (refer to TABLE 5-2 on page 5-4). TABLE 5-5 lists the point-to-point cabling scheme within the star rack. TABLE 5-6 lists the point-to-point cabling scheme between the star rack and three small farm base racks.

The following sections describe cabling configurations for the individually rackmounted equipment for the large farm configuration.

- Section 5.4.6 “Cabling the C3508 Ethernet Switch” on page 5-45
- Section 5.4.1 “Cabling the Disk Array for the Large Farm Configuration” on page 5-39

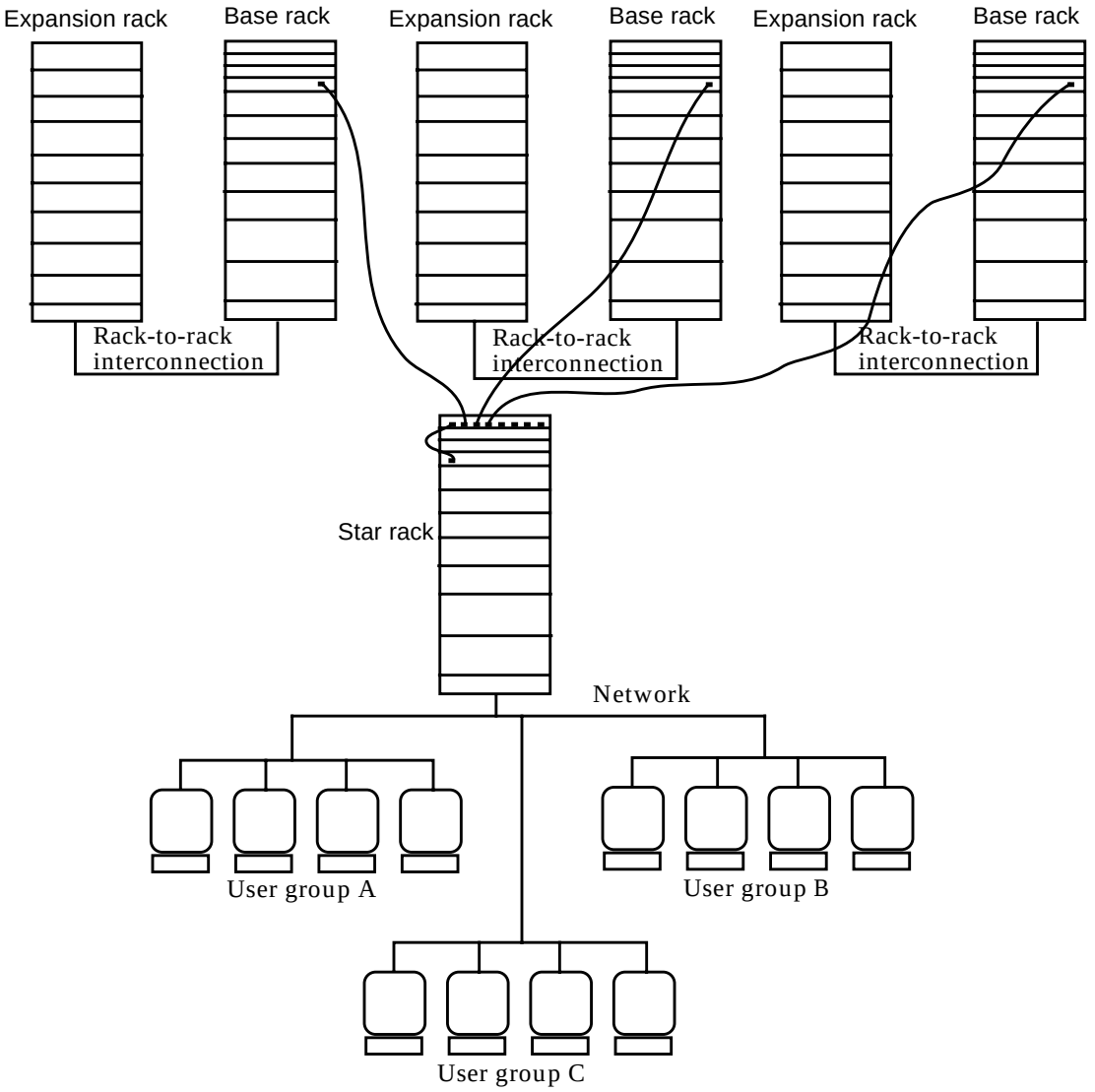


FIGURE 5-21 Example of a Sun TCF Large Farm Configuration With a Star Rack and Three Base Racks

TABLE 5-5 Point-to-Point Connections Within the Star Rack

Cable type	Connection Point 1	Connection Point 2
Fibre Channel	File server, GigabitEthernet card in the 66-MHz/64-bit PCI card slot 1	C3524 Ethernet switch, module in Gigabit slot 1
Fibre Channel	File server, host adapter card in the 33-MHz/64-bit PCI card slot 2	Disk array 1, interface board A, A0
Fibre Channel	File server, host adapter card in the 33-MHz/64-bit PCI card slot 3	Disk array 2, interface board B, B1
Fibre Channel	Disk array 1, slot A1 of interface board A	Disk array 2, slot A0 of interface board A
Fibre Channel	Disk array 1, slot B0 of interface board B	Disk array 2, slot B1 of interface board B
Ethernet	File server, serial port A	Access server 1, async port 1
Ethernet	Compute engine 1, serial port A	Access server 1, async port 2
Ethernet	Compute engine 2, serial port A	Access server 1, async port 3
Ethernet	Compute engine 3, serial port A	Access server 1, async port 4
Ethernet	Compute engine 4, serial port A	Access server 1, async port 5
Ethernet	File server, TP connector	C3524 Ethernet switch, 10/100 switch 1
Ethernet	Compute engine 1, TP connector	C3524 Ethernet switch, 10/100 switch 3
Ethernet	Compute engine 2, TP connector	C3524 Ethernet switch, 10/100 switch 5
Ethernet	Compute engine 3, TP connector	C3524 Ethernet switch, 10/100 switch 7
Ethernet	Compute engine 4, TP connector	C3524 Ethernet switch, 10/100 switch 9
Ethernet	Access server 1, Ethernet AUI port	Building network
Ethernet[1]	Access server 1, console port	System console
Ethernet	C3524 Ethernet switch, 10/100 switch 24[2]	Building network or any router/switch that allows Telnet access

1. The Ethernet cable connection that is made to the serial port A connector on the system console is made through a Cisco serial port adapter connector and a Sun Ethernet cable.

2. Roll-over cable, used in C3524 Ethernet switch-to-C3524 Ethernet switch connection.

TABLE 5-6 Point-to-Point Connections Between the Star Rack and Three Small Farm Base Racks

Cable type	Connection Point 1	Connection Point 2
Ethernet	Star rack, C3508 Ethernet switch, module in Gigabit slot 1	Star rack, C3524 Ethernet switch, module in Gigabit slot 2
Ethernet	Star rack, C3508 Ethernet switch, module in Gigabit slot 2	Base rack 1, C3524 Ethernet switch, module in Gigabit slot 2
Ethernet	Star rack, C3508 Ethernet switch, module in Gigabit slot 31	Base rack 2, C3524 Ethernet switch, module in Gigabit slot 2
Ethernet	Star rack, C3508 Ethernet switch, module in Gigabit slot 41	Base rack 3, C3524 Ethernet switch, module in Gigabit slot 2

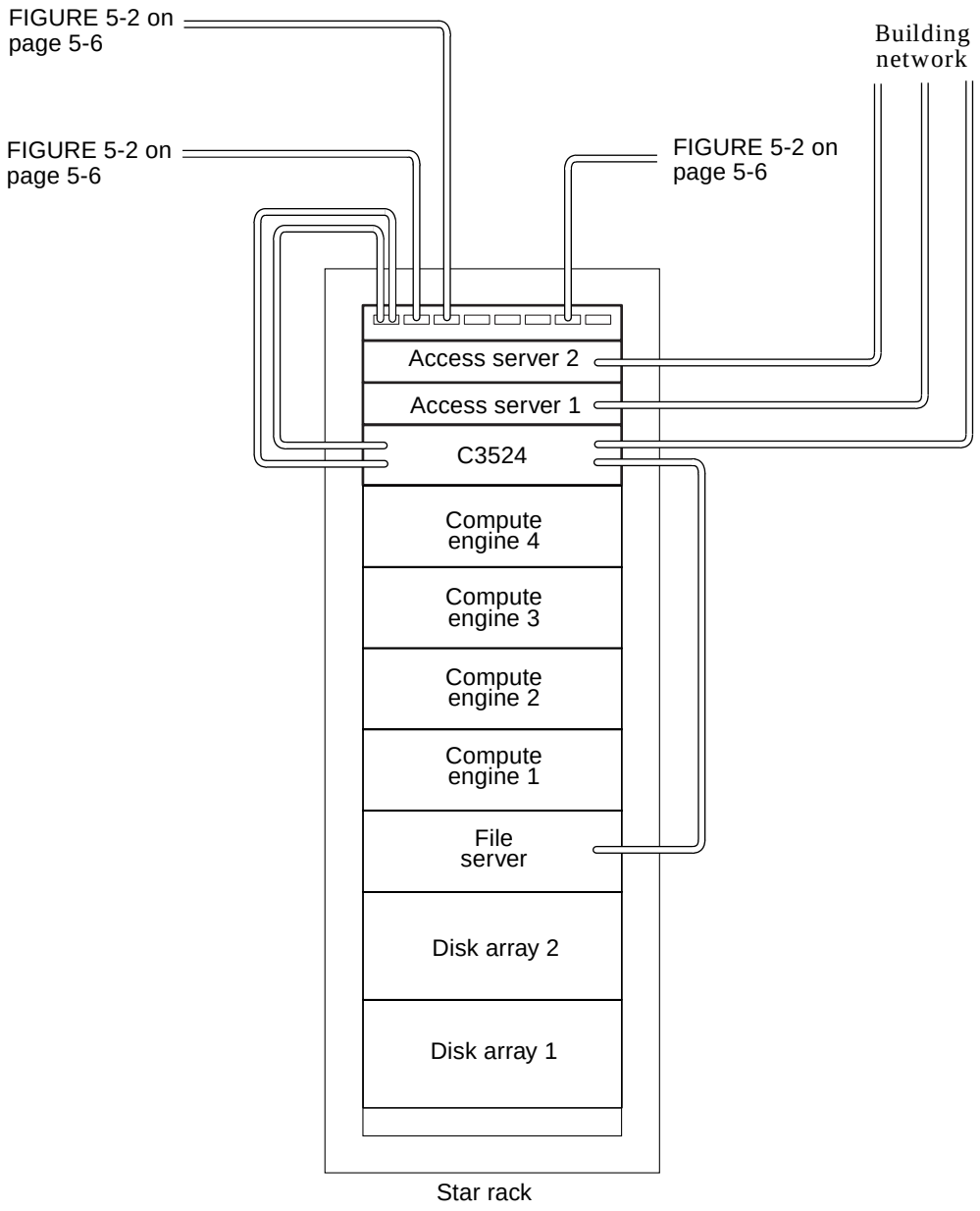


FIGURE 5-22 Large Farm Configuration

5.4.1 Cabling the Disk Array for the Large Farm Configuration

Note – For complete information on configuring the disk array, refer to the *Sun StorEdge A5000 Configuration Guide*.

With the large farm configuration, two disk arrays, designated disk array 1 and disk array 2, provide high-availability external mirroring mass storage for the Sun TCF large farm configuration.

As shown in FIGURE 5-23, the disk array has four ports: A0, A1, B0, and B1.

- A and B are the two data paths to the dual-ported disk drives. Each disk array interface board (IB) connects to either the A or B loop.
- 0 and 1 are the two gigabit interface converter (GBIC) connections to the loops on each interface board.

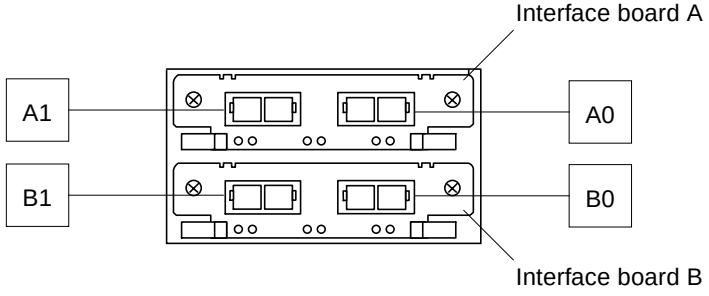


FIGURE 5-23 Disk Array Ports

5.4.1.1 Disk Array-to-File Server Cabling

TABLE 5-5 on page 5-36 lists the point-to-point cabling scheme for connections between the disk arrays and the file server. FIGURE 5-24 shows the cabling scheme between the disk arrays and the file server.

Note – Fiber optic cable connectors are keyed to prevent improper insertion.

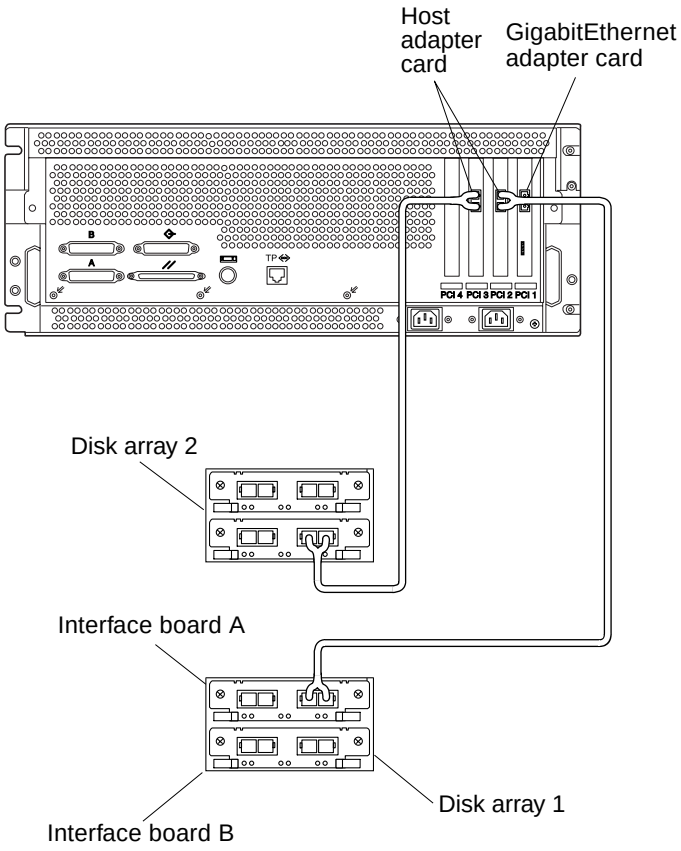


FIGURE 5-24 Cabling Disk Arrays 1 and 2 to the File Server

5.4.1.2 Disk Array 1-to-Disk Array 2 Cabling

TABLE 5-5 on page 5-36 lists the point-to-point cabling scheme for connections between the disk arrays and the file server. FIGURE 5-24 shows the cabling scheme between disk array 1 and disk array 2.

Note – Fiber optic cable connectors are keyed to prevent improper insertion.

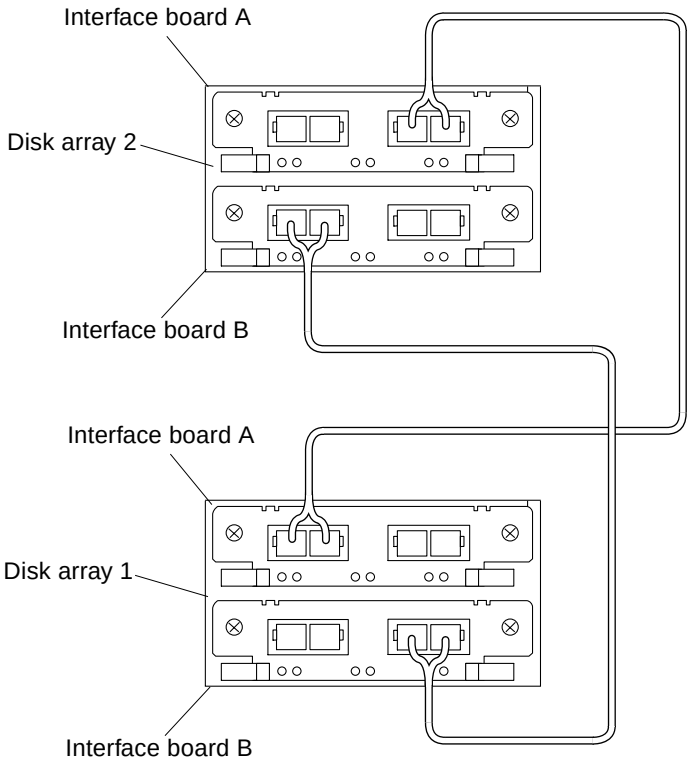


FIGURE 5-25 Disk Array 1-to-Disk Array 2 Cabling

5.4.2 Cabling the File Server for the Large Farm Configuration

With the large farm configuration, the cabling scheme for the file server is identical to the file server cabling scheme for the Sun TCF small farm configuration. Refer to Section 5.1.2 “Cabling the File Server for the Small Farm Configuration” on page 5-9. Cabling the Compute Engine for the Large Farm Configuration

5.4.3 Cabling the Compute Engine for the Large Farm Configuration

With the large farm configuration, the cabling scheme for the compute engine is identical to the compute engine cabling scheme for the Sun TCF small farm configuration. Refer to Section 5.1.3 “Cabling the Compute Engine for the Small Farm Configuration” on page 5-11.

5.4.4 Cabling the C3524 Ethernet Switches for the Large Farm Configuration

With the large farm configuration, the cabling scheme for the C3524 is identical to the C3524 cabling scheme for the Sun TCF small farm configuration (refer to Section 5.1.4 “Cabling the C3524 Ethernet Switch for the Small Farm Configuration” on page 5-12) with one exception. With the large farm configuration, Gigabit slot 2 of the C3524 Ethernet switch is electrically connected to Gigabit slot 1 of the C3508 Ethernet switch.

TABLE 5-5 lists the point-to-point cabling scheme for the star rack C3524 Ethernet switch. FIGURE 5-26 shows the cabling scheme for the star rack C3524 Ethernet switch.

Note – Refer to FIGURE 1-13 on page 1-17 for the C3524 Ethernet switch port assignments.

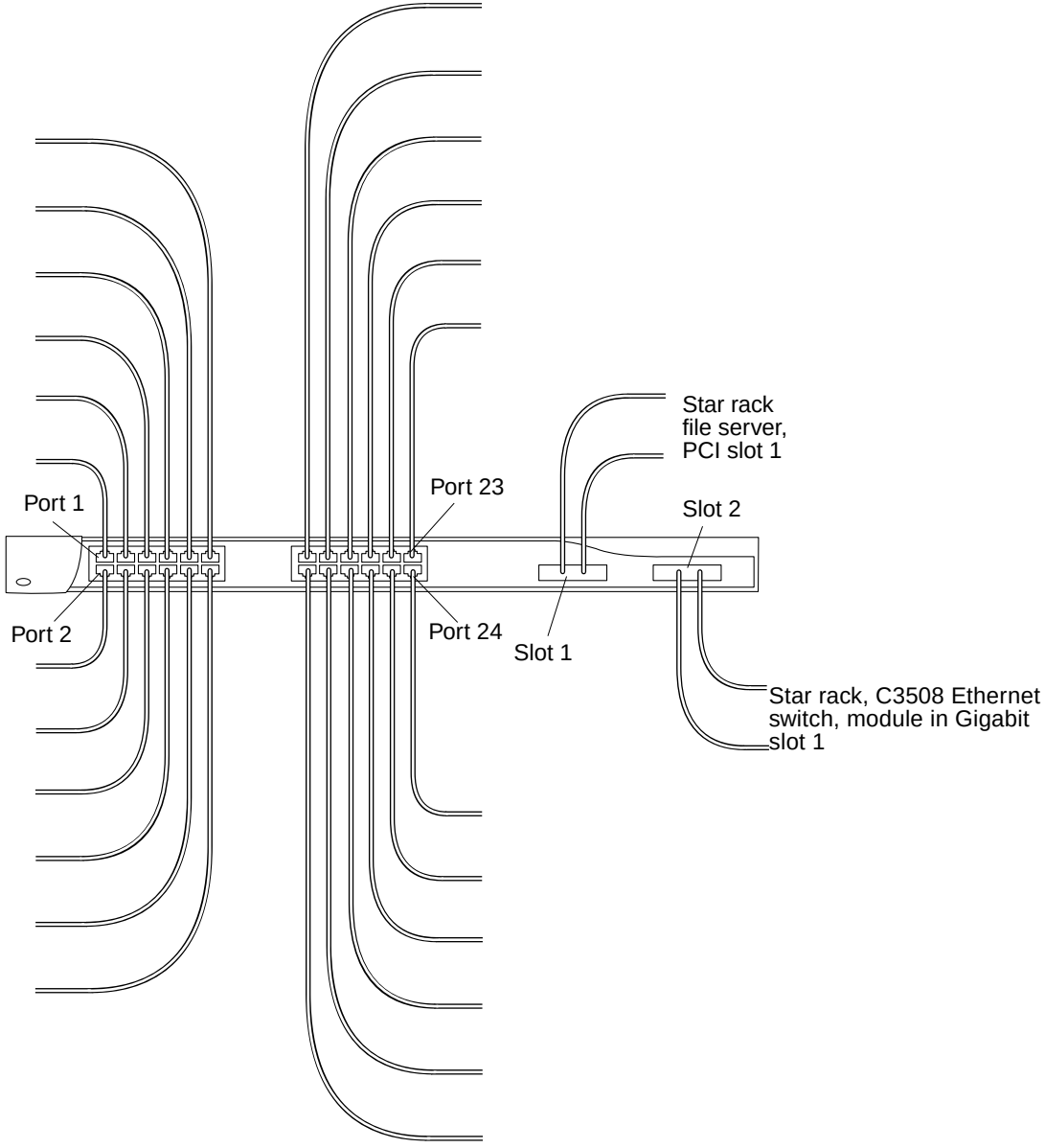


FIGURE 5-26 Cabling the Star Rack C3524 Ethernet Switch for the Large Farm Configuration

5.4.5 Cabling the Access Server for the Large Farm Configuration

With the large farm configuration, the cabling scheme for the access server 1 is identical to the access server 1 cabling scheme for the Sun TCF small farm configuration. Refer to Section 5.1.5 “Cabling the Access Server for Small Farm Configuration” on page 5-14.

Note – Refer to FIGURE 1-18 on page 1-20 for the access server port assignments.

5.4.6 Cabling the C3508 Ethernet Switch

With the large farm configuration, the C3508 Ethernet switch interconnects other base racks' C3524 Ethernet switches to form a star network.

TABLE 5-6 on page 5-37 lists the point-to-point connection between the C3508 Ethernet switch and other base racks' C3524 Ethernet switches. FIGURE 5-27 shows the C3508 Ethernet switch port assignments.

Note – Refer to FIGURE 1-15 on page 1-19 for the C3508 Ethernet switch port assignments.

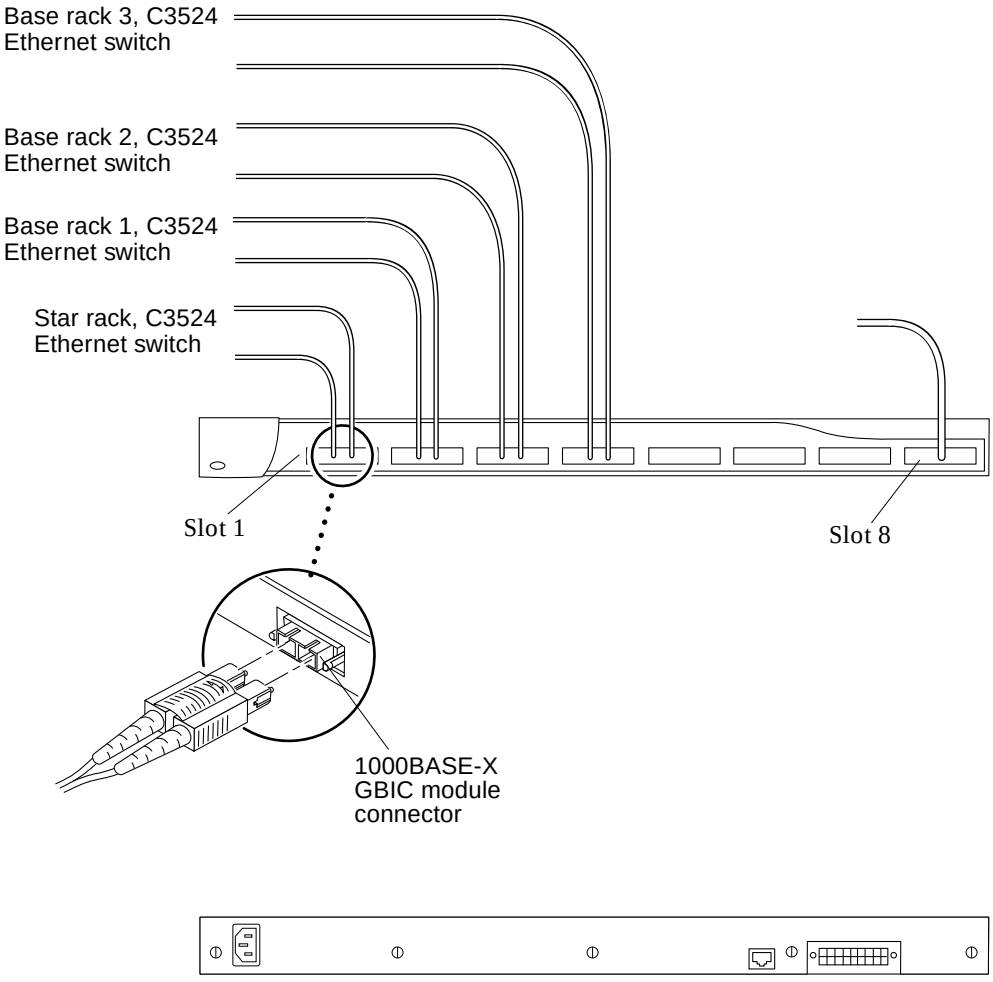


FIGURE 5-27 Cabling the C3508 Ethernet Switch

CHAPTER 6

Powering On and Off

This chapter provides procedures for powering on and powering off the rack and rackmounted devices.

- Section 6.1 “Preparing to Power On” on page 6-1
- Section 6.2 “Power On and Off Sequence” on page 6-2

Note – The keys for the Sun TCF system are found in the rack and in the Sun TCF Accessory Kit, 565-1656.

Caution – To avoid damage to internal circuits, do not connect or disconnect any cables while the system is powered on.

6.1 Preparing to Power On

Prior to powering on the Sun TCF, verify the following:

- All Ethernet transceivers and serial port adapters are properly installed.
- All power, data, and fiber optic cables are properly installed.

See the appropriate service manual (refer to “Related Documentation” on page xxxvi) for a particular device if specific troubleshooting is required.

6.2 Power On and Off Sequence

Follow the recommended sequence to power on the Sun TCF hardware components:

1. Rack (See Section 6.2.1 “Powering On the Rack” on page 6-3.)
2. Access server (See Section 6.2.3 “Powering On and Off the Access Server” on page 6-6.)
3. Ethernet switches (See Section 6.2.4 “Powering On and Off the C3524 and C3508 Ethernet Switches” on page 6-6.)
4. Disk array (See Section 6.2.5 “Powering On the Disk Array” on page 6-7.)
5. File server (See Section 6.2.7 “Powering On the File Server or Compute Engine” on page 6-8.)
6. Compute engine (See Section 6.2.7 “Powering On the File Server or Compute Engine” on page 6-8.)

Follow the recommended sequence to power off the Sun TCF hardware components:

1. Compute engine (See Section 6.2.8 “Powering Off the File Server or Compute Engine” on page 6-10.)
2. File server (See Section 6.2.8 “Powering Off the File Server or Compute Engine” on page 6-10.)
3. Disk array (See Section 6.2.6 “Powering Off the Disk Array” on page 6-7.)
4. Ethernet switches (See Section 6.2.4 “Powering On and Off the C3524 and C3508 Ethernet Switches” on page 6-6.)
5. Access server (See Section 6.2.3 “Powering On and Off the Access Server” on page 6-6.)
6. Rack (See Section 6.2.2 “Powering Off the Rack” on page 6-5.)

6.2.1 Powering On the Rack

Caution – Never move the Sun TCF rack when the rack is powered on. Movement can cause catastrophic failure. Always power off the Sun TCF rack before moving it.

1. **Verify that the key switch located at the bottom front of the rack is in the Standby position (**FIGURE 6-1**).**
2. **Turn the AC power sequencer circuit breakers at the bottom front and bottom back of the rack to Off (**FIGURE 6-2**).**
3. **Verify that the rack power cord is connected to an AC outlet.**

Caution – Do not disconnect the power cord from the outlet when you work on or in the rack. This connection provides a ground path that prevents damage from electrostatic discharge.

Caution – Never move a device or rack when system power is on. Excessive movement can cause catastrophic disk drive failure. Always power the rack off before moving it.

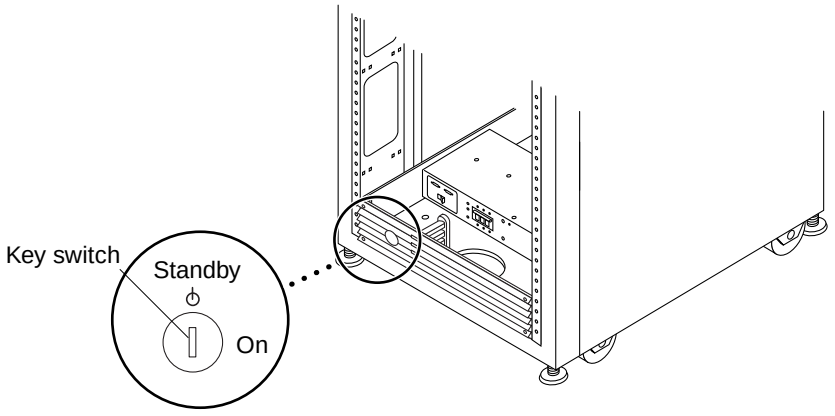


FIGURE 6-1 Location of Key Switch on Bottom Front Panel

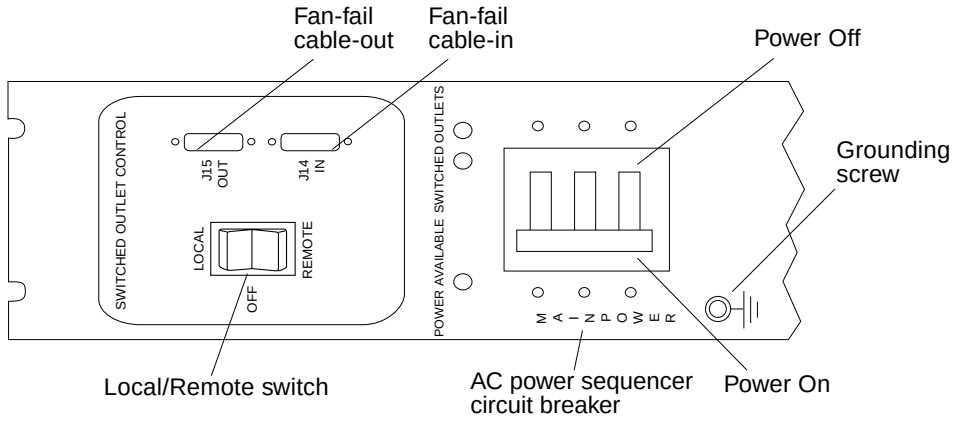


FIGURE 6-2 AC Power Sequencer Control Panel

4. **Set the Local/Remote switch on the rack to Remote (**FIGURE 6-2**).**
5. **Turn the AC power sequencer circuit breakers on the rack to On (**FIGURE 6-2**).**
6. **Turn the key switch at the front of the rack to the On position (**FIGURE 6-3**).**

   The rack powers on approximately 20 seconds after the key switch is turned on. This delay minimizes power surges.

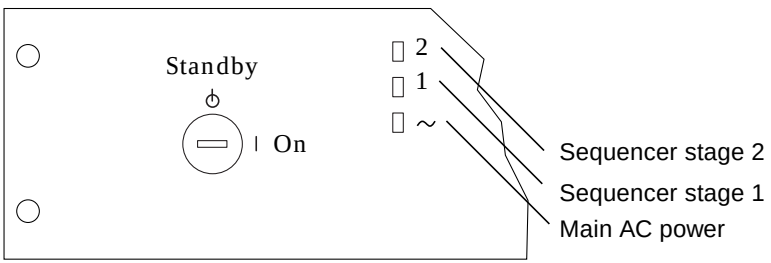


FIGURE 6-3 Front Sequencer Status Lights

Note – The three power status indicators on the front panel show the status of the front power sequencer. The bottom LED will light as soon as power is applied to the rack. The LED for sequencer stage 1 will light, followed by the LED for sequencer stage 2.

Note – The bottom LED will not light unless the AC power sequencer circuit breakers for the front power supply are on.

---

7. **To check the status of the back power sequencer, open the back door of the rack and look at the three green LEDs on the back power sequencer.**

8. **Turn the power on to the rack.**

   After power is turned on, several events occur.

   See the *Sun StorEdge Expansion Cabinet Installation and Service Manual* for instructions. You might have to enter a specific software command when booting the system so that the system will recognize the rack. See the *Sun Technical Compute Farm Product Overview and Software Guide* for more information.

6.2.2 Powering Off the Rack

Caution – Never move a Sun TCF rack when the rack is powered on. Movement can cause catastrophic failure. Always power off the rack before moving it.

Before turning off the power to the rack, halt any I/O between host system(s) and devices in the rack.

Depending upon the type of devices in the rack, the type of host system(s), and the software running on the host system(s), you might need to:

1. Stop software from accessing devices in the enclosure
2. Exit the Solaris operating environment
3. Turn off power to your host system(s)

Refer to the following for specific instructions:

- *Solaris Handbook for Sun Peripherals*
- System administration guides that correspond to your operating system
- Documentation that came with the devices
- Documentation that came with your host system(s)

Caution – Failure to properly shut down the file server or compute engine may result in the loss of data.

Caution – Failure to stop I/O between host system(s) and devices in the rack can result in the loss of data.

1. **Stop I/O to devices in the rack.**

2. **Turn the key switch located at the front of the rack to the Standby position (**FIGURE 6-1 **on page 6-3).**
3. **At the bottom of the rack, remove the trim panels and turn the AC power sequencer circuit breakers to Off (**FIGURE 6-2 **on page 6-4).**
4. **If components other than disk or tape drives (such as the power sequencer) are being serviced, disconnect the rack power cords from the grounded outlets.**

Caution – When disk drives are to be serviced, do not disconnect the power cords from the rack power sequencer or the rack power cord from the outlet. These connections provide the ground paths necessary to prevent any damage caused by electrostatic discharge to the drives installed in the rack.

Caution – The power cables to each power sequencer must be disconnected from the power source if you want to stop all AC power input to the rack.

6.2.3 Powering On and Off the Access Server

To power on and off the access server, press the on/off switch. Refer to the *Cisco AS2509-RJ and AS2511-RJ Access Server Hardware Installation Guide*.

6.2.4 Powering On and Off the C3524 and C3508 Ethernet Switches

To power on and off the C3524 and C3508 Ethernet switches, connect their power cord to the power sequencer outlet. Refer to the *Catalyst 3500 Series XL Installation Guide*.

6.2.5 Powering On the Disk Array

Note – Ensure that the rack is powered on prior to powering on component hardware.

To power on the disk array, press the back panel power circuit breaker (FIGURE 6-4).

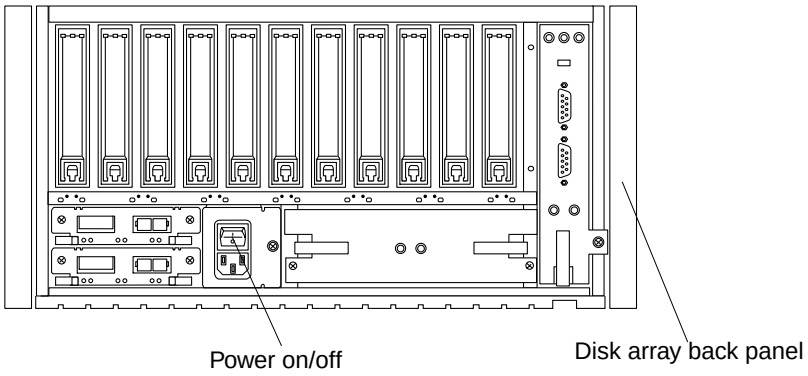


FIGURE 6-4 Powering On the Disk Array

6.2.6 Powering Off the Disk Array

To power off the disk array, press the back panel power circuit breaker (FIGURE 6-4).

6.2.7 Powering On the File Server or Compute Engine

Caution – Never move the system when the system power is powered on. Movement can cause catastrophic disk drive failure. Always power off the system before moving it.

Caution – Before powering on the file server or compute engine, ensure that the file server or compute engine cover is properly installed.

Caution – Ensure that the rack is powered on prior to powering on component hardware.

1. **Turn on power to any peripheral and external storage devices.**
2. **Turn the front panel key switch to the Power-On/Off position (**FIGURE 6-5**).**
3. **Press the front panel Power button once.**
4. **Turn the key switch to the Locked position (**FIGURE 6-6**).**

Note – The Locked position prevents accidentally powering off the system. See the *Sun Enterprise 420R Server Service Manual* for more information about key switch settings.

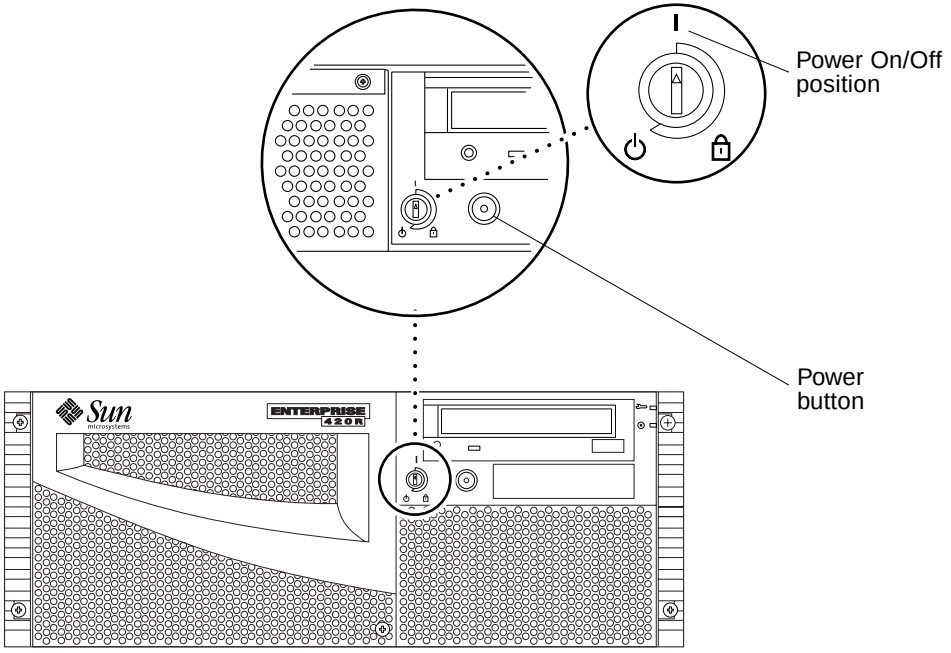


FIGURE 6-5 Powering On the File Server or Compute Engine

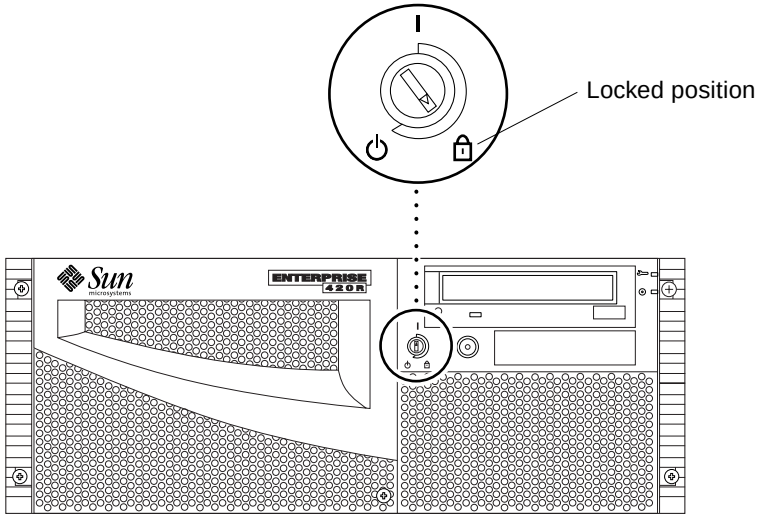


FIGURE 6-6 Setting the Locked Position

6.2.8 Powering Off the File Server or Compute Engine

Caution – Before turning off power to the file server or compute engine, halt the operating system. Failure to halt the operating system properly can result in loss of disk drive data.

1. **Notify users that the Sun TCF will be powered down.**
2. **Back up the system files and data, if necessary.**
3. **Halt the operating system using the appropriate commands.**

   Refer to the *Solaris Handbook for Sun Peripherals* that corresponds to your operating system.
4. **Wait for the system halt messages and the** ok **prompt.**
5. **Turn the key switch on the front panel of the file server or the compute engine to the Standby position (**FIGURE 6-7**).**

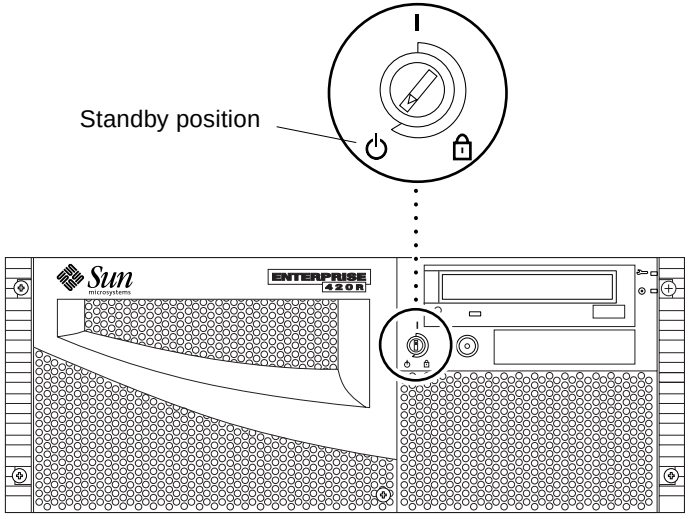


FIGURE 6-7 Setting the Standby Position

CHAPTER 7

Connecting a System Console and Configuring the Access Server

This chapter provides procedures to connect a system console to the access server, and to configure the access server.

- Section 7.1 “Installing a System Console” on page 7-1
- Section 7.2 “Configuring the Access Server” on page 7-3
- Section 7.3 “Reverting To Factory Settings” on page 7-10
- Section 7.4 “Configuring the File Server and Compute Engines” on page 7-10

7.1 Installing a System Console

Prior to powering on the Sun TCF, it is necessary to connect a local system console to the access server (typically access server 1) so that the access server can be configured. FIGURE 7-1 illustrates a typical system console configuration.

To install the system console:

1. **Ensure that all the hardware installation is complete.**
2. **Connect a system console to the access server.**

   Refer to the *Cisco AS2509-RJ and AS2511-RJ Access Server Hardware Installation Guide*.

   Note – The Ethernet cable connection that is made to the serial port A connector on the system console is made through a Cisco serial port adapter connector and a Sun Ethernet cable.

3. **Ensure that power is applied to the rack, access server, and system console.**

   Refer to Chapter 6 “Powering On and Off”.

4. **Login to the system console.**

5. **Configure the access server (refer to Section 7.2 “Configuring the Access Server” on page 7-3). Make sure the access server has a valid host name and IP address.**

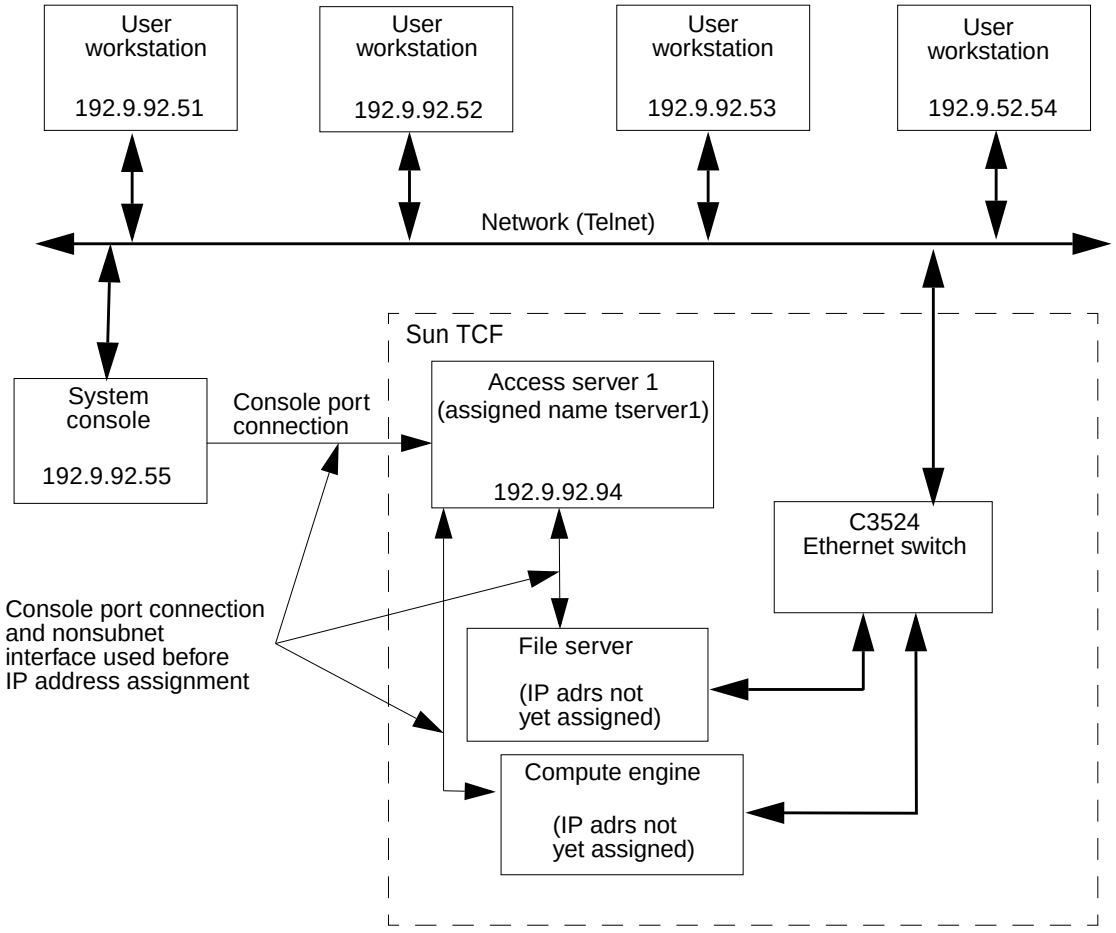


FIGURE 7-1 Installing a System Console

7.2 Configuring the Access Server

You must configure the access server prior to initial full power-on of the Sun TCF. Typically, only one access server is required in the the Sun TCF and the configuration process occurs only once.

If your Sun TCF configuration uses both access servers, such as in medium farm configuration example 1, then you must configure each access server in turn through a `tip` connection to the system console.

The following three code examples illustrate what is viewed at the system console while configuring the access server. The three steps perform the following:

1. During the first step (CODE EXAMPLE 7-1), passwords are set and the access server is named
2. During the second step (CODE EXAMPLE 7-2), the access server is configured.
3. The third step (refer to CODE EXAMPLE 7-3) is an optional step that shows a typical display after the `show run` and `show line` commands are entered from the system monitor (or user workstation through Telnet).

Note – The following examples provide the basic steps that are required to configure the access server. For more detailed instructions and options about configuring the access server, refer to the *Cisco AS2509-RJ and AS2511-RJ Access Server Hardware Installation Guide*

Note – After the access server is configured, the system administrator can log in to the access server through a remote system console on the same network as the NIS server and use Telnet.

Prior to configuring the access server(s), you will need the following:

- Host name for each access server to be actively configured
- IP address for each access server to be actively configured
- Password for enable secret
- Password for Enable

CODE EXAMPLE 7-1 Configuring the Access Server

```
System Bootstrap, Version 11.0(10c)XB1, PLATFORM SPECIFIC RELEASE
SOFTWARE (fc1)
Copyright (c) 1986-1997 by cisco Systems
2500 processor with 6144 Kbytes of main memory

Notice: NVRAM invalid, possibly due to write erase.

F3: 4384224+59076+237284 at 0x3000060

              Restricted Rights Legend

Use, duplication, or disclosure by the Government is
subject to restrictions as set forth in subparagraph
(c) of the Commercial Computer Software - Restricted
Rights clause at FAR sec. 52.227-19 and subparagraph
(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.

           cisco Systems, Inc.
           170 West Tasman Drive
           San Jose, California 95134-1706

Cisco Internetwork Operating System Software
IOS (tm) 2500 Software (C2500-I-L), Version 11.2(18)P,  RELEASE
SOFTWARE (fc1)
Copyright (c) 1986-1999 by cisco Systems, Inc.
Compiled Mon 12-Apr-99 13:29 by ashah
Image text-base: 0x030241E0, data-base: 0x00001000

cisco AS2511-RJ (68030) processor (revision K) with 6144K/2048K
bytes of memory.
Processor board ID 17601898, with hardware revision 00000000
Bridging software.
X.25 software, Version 2.0, NET2, BFE and GOSIP compliant.
1 Ethernet/IEEE 802.3 interface(s)
1 Serial network interface(s)
16 terminal line(s)
32K bytes of non-volatile configuration memory.
8192K bytes of processor board System flash (Read ONLY)

Notice: NVRAM invalid, possibly due to write erase.
```

CODE EXAMPLE 7-1 Configuring the Access Server *(Continued)*

```
          --- System Configuration Dialog ---

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.
Would you like to enter the initial configuration dialog? [yes]:
Press RETURN

First, would you like to see the current interface summary? [yes]:
no

Configuring global parameters:

  Enter host name [Router]: tserver1[1]

The enable secret is a one-way cryptographic secret used
instead of the enable password when it exists.

  Enter enable secret: farm

The enable password is used when there is no enable secret
and when using older software and some boot images.

  Enter enable password: root
  Enter virtual terminal password: root
  Configure SNMP Network Management? [yes]: no
  Configure IP? [yes]: no

Async lines accept incoming modems calls. If you will have
users dialing in via modems, configure these lines.

  Configure Async lines? [yes]: no

Configuring interface parameters:

Configuring interface Ethernet0:
  Is this interface in use? [yes]: no

Configuring interface Serial0:
  Is this interface in use? [yes]: no

The following configuration command script was created:
```

CODE EXAMPLE 7-1 Configuring the Access Server *(Continued)*

```
hostname tserver1
enable secret 5 $1$aMTe$5pEDayfUYX613YxzPJz/6/
enable password root
line vty 0 4
password root
no snmp-server
!
no ip routing
!
interface Ethernet0
shutdown
no ip address
!
interface Serial0
shutdown
no ip address
!
end

Use this configuration? [yes/no]: Press RETURN
Building configuration...
[OK]Use the enabled mode ‘configure’ command to modify this
configuration.


Press RETURN to get started!


%LINK-3-UPDOWN: Interface Ethernet0, changed state to up
%LINK-3-UPDOWN: Interface Serial0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0, changed
state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0, changed
state to down
%LINK-5-CHANGED: Interface Ethernet0, changed state to
administratively down
%LINK-5-CHANGED: Interface Serial0, changed state to
administratively dow
tserver1>n
%IP-5-WEBINST_KILL: Terminating DNS process
%SYS-5-RESTART: System restarted --
Cisco Internetwork Operating System Software
```

CODE EXAMPLE 7-1 Configuring the Access Server *(Continued)*

```
IOS (tm) 2500 Software (C2500-I-L), Version 11.2(18)P,  RELEASE
SOFTWARE (fc1)
Copyright (c) 1986-1999 by cisco Systems, Inc.
Compiled Mon 12-Apr-99 13:29 by ashah
tserver1>
tserver1>
```

1. “tserver1” is an example. It is advisable that the NIS server name that corresponds to the IP address be used.

CODE EXAMPLE 7-2 Typical System Console Display After the Access Server is Configured

```
tserver1>
tserver1>enable
Password: root
tserver2#configure
Configuring from terminal, memory, or network [terminal]? Press
RETURN
Enter configuration commands, one per line.  End with CNTL/Z.
tserver1(config)#interface Ethernet0
tserver1(config-if)#ip address 192.9.92.94 255.255.255.0
tserver1(config-if)#no shutdown
tserver1(config-if)#ip classless


tserver1(config)#ip routing[1]
tserver1(config)#ip name-server 192.9.92.4
tserver1(config)#ip route 0.0.0.0 0.0.0.0 192.9.92.2


tserver1(config)#line 1 16
tserver1(config-line)#no exec
tserver1(config-line)#exec-timeout 0 0
tserver1(config-line)#no activation-character
tserver1(config-line)#transport input all
tserver1(config-line)#Escape None
tserver1(config-line)#flowcontrol hardware
tserver1(config-line)#no autobaud
tserver1(config-line)#speed 9600
tserver1(config-line)#exit
tserver1(config)#exit
tserver1#
```

CODE EXAMPLE 7-2 Typical System Console Display After the Access Server is Configured *(Continued)*

```
%SYS-5-CONFIG_I: Configured from console by console
tserver1#write
Building configuration...
[OK]
tserver1#
```

1. This command and the next two commands are optional and required if user is on NIS, and/or uses a router.

CODE EXAMPLE 7-3 Display the Configuration (Optional)

```
tserver1#show run
Building configuration...

Current configuration:
!
version 11.2
no service udp-small-servers
no service tcp-small-servers
!
hostname tserver1
!
enable secret 5 $1$aMTe$5pEDayfUYX613YxzPJz/6/
enable password root
!
ip name-server 192.9.92.4
!
interface Ethernet0
 ip address 192.9.92.94 255.255.255.0
 no ip mroute-cache
!
interface Serial0
 no ip address
 no ip route-cache
 shutdown
!
ip classless
ip route 0.0.0.0 0.0.0.0 192.9.92.2
!
line con 0
line 1 16
 no exec
 exec-timeout 0 0
```

CODE EXAMPLE 7-3 Display the Configuration (Optional)

```
 no activation-character
 transport input all
 escape-character NONE
 flowcontrol hardware
line aux 0
line vty 0 4
 password root
 login
!
end

tserver1#show line
 Tty Typ     Tx/Rx     A Modem  Roty AccO AccI  Uses    Noise
Overruns
*  0 CTY              -    -      -    -    -     0       0       0/0
   1 TTY   9600/9600   -    -      -    -    -     0       0       0/0
   2 TTY   9600/9600   -    -      -    -    -     0       0       0/0
   3 TTY   9600/9600   -    -      -    -    -     0       0       0/0
   4 TTY   9600/9600   -    -      -    -    -     0       0       0/0
   5 TTY   9600/9600   -    -      -    -    -     0       0       0/0
   6 TTY   9600/9600   -    -      -    -    -     0       0       0/0
   7 TTY   9600/9600   -    -      -    -    -     0       0       0/0
   8 TTY   9600/9600   -    -      -    -    -     0       0       0/0
   9 TTY   9600/9600   -    -      -    -    -     0       0       0/0
  10 TTY   9600/9600   -    -      -    -    -     0       0       0/0
  11 TTY   9600/9600   -    -      -    -    -     0       0       0/0
  12 TTY   9600/9600   -    -      -    -    -     0       0       0/0
  13 TTY   9600/9600   -    -      -    -    -     0       0       0/0
  14 TTY   9600/9600   -    -      -    -    -     0       0       0/0
  15 TTY   9600/9600   -    -      -    -    -     0       1       0/0
  16 TTY   9600/9600   -    -      -    -    -     0       0       0/0
  17 AUX   9600/9600   -    -      -    -    -     0       0       0/0
  18 VTY              -    -      -    -    -     0       0       0/0
  19 VTY              -    -      -    -    -     0       0       0/0
  20 VTY              -    -      -    -    -     0       0       0/0
  21 VTY              -    -      -    -    -     0       0       0/0
  22 VTY              -    -      -    -    -     0       0       0/0

tserver1#exit
```

7.3 Reverting To Factory Settings

CODE EXAMPLE 7-4 is an optional step that shows how to erase the configuration settings and revert back to the factory setting. Always reset power to the access server after reverting back to the factory settings.

CODE EXAMPLE 7-4 Reverting Back to Factory Settings

```
tserver1>enable
Password: root
tserver1#erase startup-config
tserver1#exit
```

7.4 Configuring the File Server and Compute Engines

Once the access server is configured, the file server and the compute engines can be configured. To configure the file server and compute engines:

1. **Complete the Sun TCF power-on sequence.**

   See Section 6.2 “Power On and Off Sequence” on page 6-2.

2. **Refer to the** *Sun Technical Compute Farm Product Overview and Software Guide*.

CHAPTER 8

Fault Isolation and Troubleshooting

This chapter describes how to fault isolate and troubleshoot possible hardware problems.

This chapter contains the following topics:

- Section 8.1 “Sun Management Center 2.1 Software” on page 8-1
- Section 8.2 “SunVTS Description” on page 8-2
- Section 8.3 “Troubleshooting the Sun TCF System” on page 8-4

8.1 Sun Management Center 2.1 Software

The Sun TCF is fault isolated through Sun Management Center 2.1 software. This software identifies a range of hardware and system status states quickly. For example, it can monitor a major condition such as a CPU failure or a minor condition such as low swap space. You can also monitor hardware performance to detect incipient hardware failures, such as soft read errors on a disk.

To give you this critical performance information, Sun Management Center 2.1 software analyzes system performance in real time; when performance problems occur, the event system alerts you, if desired, to the status of most system components.

To learn more about the Sun Management Center 2.1 software, refer to the *Sun Management Center 2.1 Software User’s Guide* and the *Sun Technical Compute Farm Product Overview and Software Guide*.

TABLE 8-1 Sun Management Center 2.1 Software Features

Feature	Description
Performance monitoring	Diagnoses and addresses potential problems such as capacity problems or bottlenecks. Monitors four categories of performance data: CPU, disk, memory, and network.
Configuration monitoring	Displays physical and logical views of exact server configurations; configuration monitoring improves system serviceability.
Remote monitoring	Allows a server within a network to be monitored from any location in the network.
Fault management	Isolates potential problems or failed components. Provides access to system log file and maintains a log file of conditions for future analysis.
Graphical user interface (GUI)	Ensures that users get the information they need quickly and easily with the configurable GUI. The GUI provides access to SunVTS diagnostics, which diagnoses hardware.

8.2 SunVTS Description

SunVTS™ is Sun's online validation test suite. SunVTS is a comprehensive software diagnostic package that tests and validates hardware by verifying the connectivity and functionality of most hardware controllers, devices, and platforms.

SunVTS can be tailored to run on various types of systems ranging from desktops to servers, and has customizable features to meet the varying requirements of many diagnostic situations.

Use SunVTS to validate a system during development, production, receiving inspection, troubleshooting, periodic maintenance, and system or subsystem stressing.

SunVTS executes multiple diagnostic tests from one graphical user interface (GUI) that provides test configuration and status monitoring. The user interface can run in the CDE or OPEN LOOK environments or through a TTY-mode interface for situations when running a GUI is not possible.

The SunVTS interface can run on one system to display the SunVTS test session of another system on the network.

SunVTS is distributed with each SPARC™ Solaris release. It is located on the Sun Computer Systems Supplement CD.

8.2.1 SunVTS Requirements

Your system must meet the following requirements to run SunVTS:

- The SunVTS packages must be installed. For specific details, refer to the corresponding SunVTS documentation (described below).
- The system must be booted to the multiuser level (level 3).
- To run SunVTS with a GUI, that GUI must be installed. Otherwise, run SunVTS with the TTY-mode interface.

8.2.2 SunVTS References

To find out more information about the use of SunVTS, refer to the SunVTS documentation that corresponds to the Solaris release that you are running.

The following list describes the content of each SunVTS document:

- *SunVTS User's Guide* — describes how to install, configure, and run the SunVTS diagnostic software.
- *SunVTS Quick Reference Card* — provides an overview of how to use the SunVTS CDE interface.
- *SunVTS Test Reference Manual* — provides details about each individual SunVTS test.

These documents are part of the Solaris on Sun Hardware Collection AnswerBook2™ set. This collection is distributed on the Sun Computer Systems Supplement CD with each SPARC Solaris release and also accessible at `http://docs.sun.com`.

8.3 Troubleshooting the Sun TCF System

Use this checklist as a guide to verify and isolate common installation problems.

- All terminators are properly installed.
- All power, data, and fiber optic cables are properly installed.
- Ethernet switch ports operate properly.
- All host names and IP addresses have been properly entered.
- Two or more drives on the same SCSI bus do not use the same SCSI address.
- The power is turned on to:
  - Rack(s)
  - Access server(s) and Ethernet switch(es)
  - Disk array(s)
  - File server
  - Compute engines

See the appropriate service manual (refer to Section “Related Documentation” on page -xxxvi) for the device if specific troubleshooting is required.

8.3.1 Preparing to Service the Disk Array

Except for removing and replacing disk drives, the disk array should be serviced by a qualified hardware service provider. To fault isolate and troubleshoot the disk array, or the prepare the disk array for service, refer to Section 9.4 “Disk Array” on page 9-35 and the *Sun StorEdge A5000 Installation and Service Manual*.

8.3.2 Preparing to Service the File Server or Compute Engine

Except for removing and replacing disk drives, the file server and compute engine should be serviced by a qualified hardware service provider. To fault isolate and troubleshoot the file server and compute engine, or to prepare the file server and compute engine for service, refer to Section 9.3 “File Server or Compute Engine” on page 9-14 and the *Sun Enterprise 420R Server Service Manual*.

8.3.3 Preparing to Service the C3524 or C3508 Ethernet Switches

To fault isolate and troubleshoot the C3524 or C3508 Ethernet switches, refer to the Cisco *Catalyst 3500 Series XL Installation Guide*.

8.3.4 Preparing to Service the Access Server

To fault isolate and troubleshoot the access server, refer to the *Cisco AS2509-RJ and AS2511-RJ Access Server Hardware Installation Guide*.

CHAPTER 9

Removing, Replacing, and Cabling Devices

This chapter provides procedures to remove, replace, and cable specific rack devices. This chapter contains the following topics:

- Section 9.1 “Access Server” on page 9-2
- Section 9.2 “C3524 and C3508 Ethernet Switches” on page 9-7
- Section 9.3 “File Server or Compute Engine” on page 9-14
- Section 9.4 “Disk Array” on page 9-35

Note – The keys for the Sun TCF system are found in the rack and in the Sun TCF Accessory Kit, 565-1656.

Caution – When servicing the rack, remove only one system device from the rack at a time. If possible, remove system devices from the rack from the top to the bottom to prevent raising the rack center of gravity. Use extra caution when moving the rack onto ramps.

Caution – Never remove or replace a device when system power is on.

9.1 Access Server

Note – When removing and replacing the access server, a nonconducting step ladder and a flashlight may be required.

Note – Refer to the *Cisco AS2509-RJ and AS2511-RJ Access Server Hardware Installation Guide* for complete details.

Caution – Never remove or replace a device when system power is on.

Use the following procedures to remove, replace, and cable the access server.

- Section 9.1.1 “Removing the Access Server” on page 9-2
- Section 9.1.2 “Replacing the Access Server” on page 9-4
- Section 9.1.3 “Connecting the Access Server to the Network” on page 9-6
- Section 9.1.4 “Connecting the Access Server to a System Terminal” on page 9-7

9.1.1 Removing the Access Server

1. **Unlock, open, and remove the rack door(s) as appropriate.**
2. **Power off the system.**

   See Section 6.2 “Power On and Off Sequence” on page 6-2.

Caution – Use proper ESD grounding techniques when handling components. Wear an antistatic wrist strap and use an ESD-protected mat. Store ESD-sensitive components in antistatic bags before placing them on any surface.

3. **Disconnect the access server cabling.**

   Refer to Chapter 5 “Cabling the Sun TCF Devices”.

4. **Disconnect the power cable from the back panel of the access server as described in the** *Cisco AS2509-RJ and AS2511-RJ Access Server Hardware Installation Guide***.**

5. **Using a No. 2 Phillips screwdriver, proceed as follows (**FIGURE 9-1**):**

   a. **Remove the back panel screws securing the access server chassis to the mounting plate.**

   b. **Remove the front panel screws securing the access server chassis to the rack.**

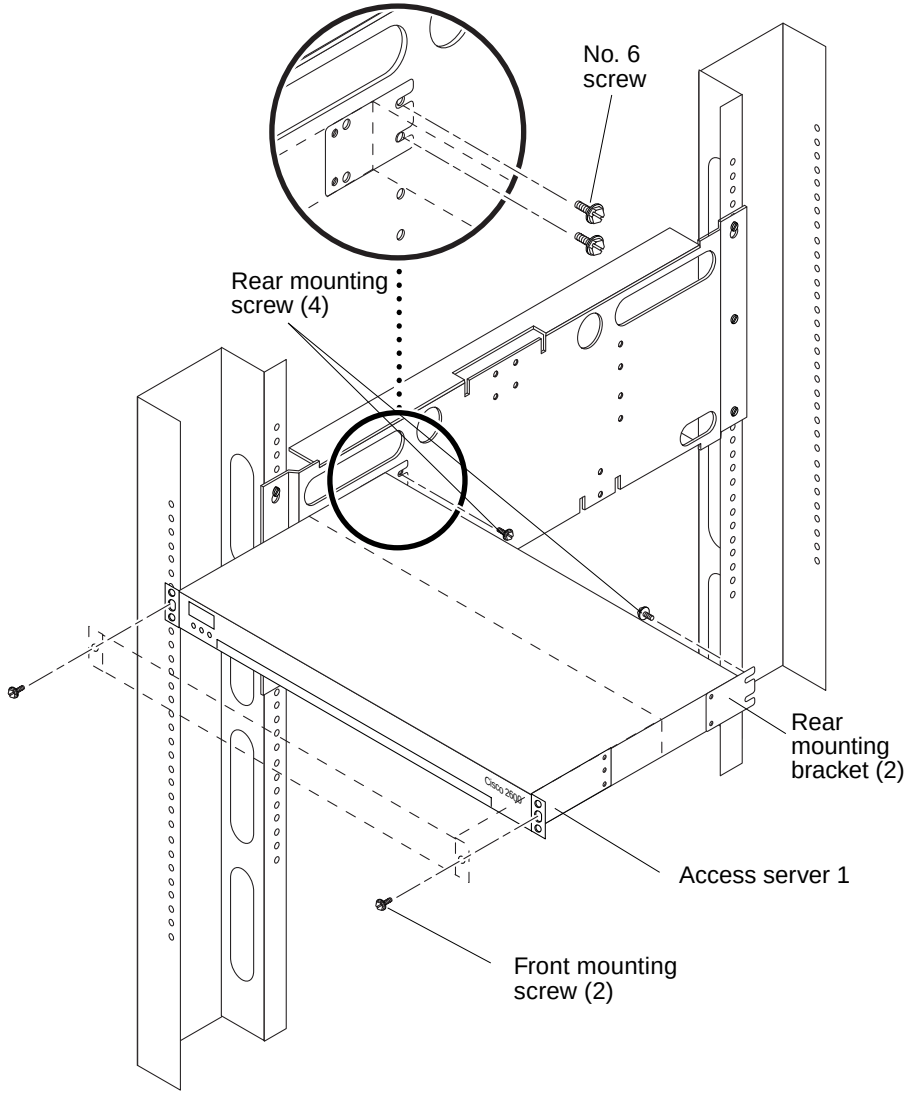


FIGURE 9-1 Removing and Replacing the Access Server

6. **Remove the access server from the rack.**

7. **Set the access server on a workbench.**
8. **Using a No. 2 Phillips screwdriver, remove the two screws securing each back mounting bracket from the access server (**FIGURE 9-2**).**
9. **Set the rear mounting brackets and screws aside.**

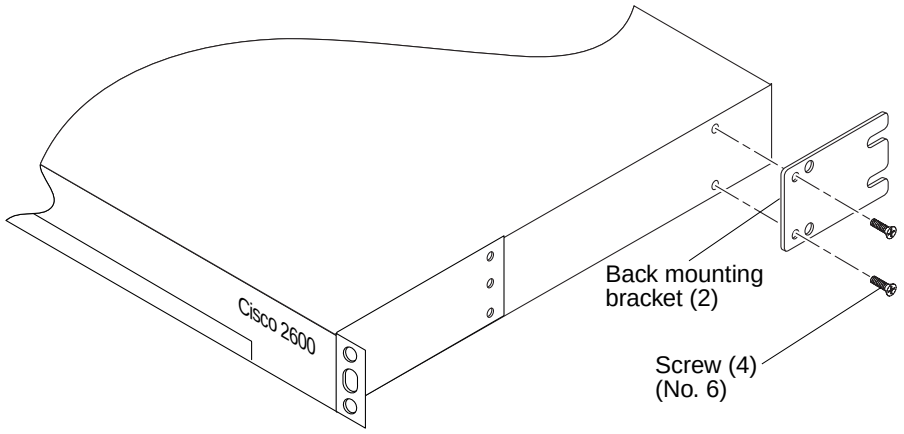


FIGURE 9-2 Removing and Replacing the Access Server Rear Bracket

9.1.2 Replacing the Access Server

1. **Set the replacement access server on a workbench.**
2. **Using a No. 2 Phillips screwdriver, install the four screws securing each front mounting bracket to the access server (**FIGURE 9-3**).**
3. **Using a No. 2 Phillips screwdriver, install the two screws securing each back mounting bracket to the access server (**FIGURE 9-2**).**
4. **Position the access server into the rack.**
5. **Using a No. 2 Phillips screwdriver, proceed as follows (**FIGURE 9-1**):**
   a. **Replace the front panel screw securing the access server chassis to the rack.**
   b. **Replace the back panel screws securing the access server chassis to the rack plate.**

      Refer to FIGURE 9-4 for proper screw placement position.
6. **Connect the power cable to the back panel of the access server as described in the** *Cisco AS2509-RJ and AS2511-RJ Access Server Hardware Installation Guide***.**

7. **Connect the access server cabling.**

   Refer to Chapter 5 “Cabling the Sun TCF Devices”.

8. **Power on the system.**

   See Section 6.2 “Power On and Off Sequence” on page 6-2.

9. **Replace, close, and lock the rack door(s) as appropriate.**

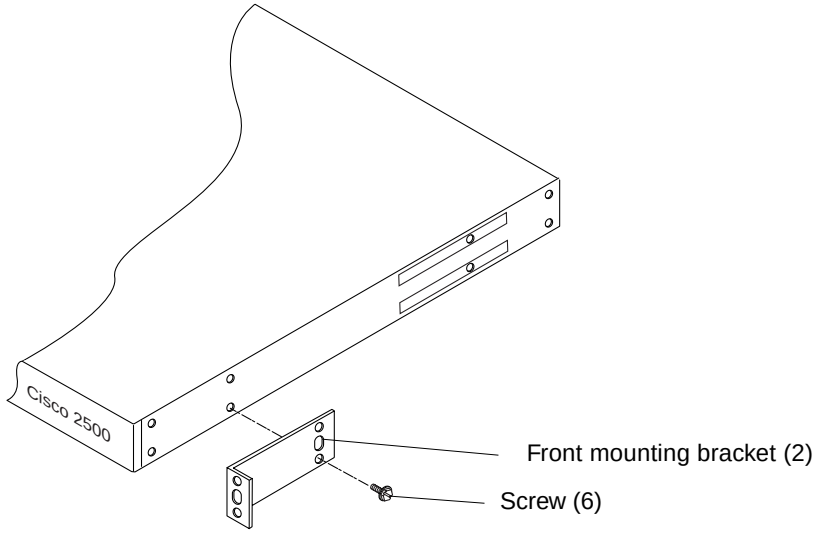


FIGURE 9-3 Installing the Access Server Front Bracket

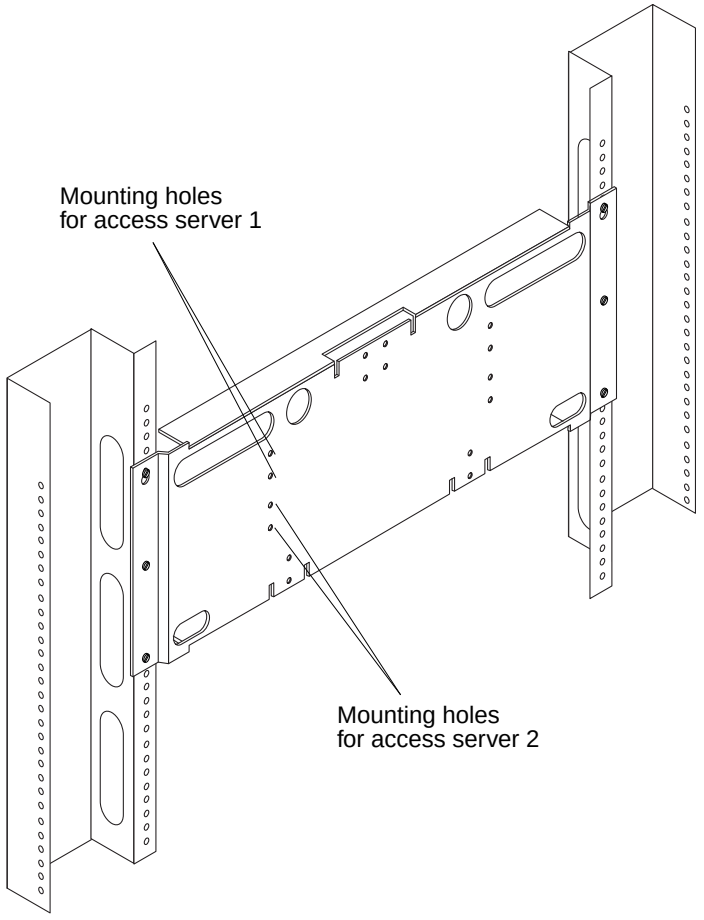


FIGURE 9-4 Mounting Location for the Access Servers

9.1.3 Connecting the Access Server to the Network

Connect the access server to the network as described in the *Cisco AS2509-RJ and AS2511-RJ Access Server Hardware Installation Guide*.

9.1.4 Connecting the Access Server to a System Terminal

The access server includes a console port. The console port provides local access to the access server through a system terminal. Connect a system terminal to the access server console port as described in Section 7.1 “Installing a System Console” on page 7-1 and the *Cisco AS2509-RJ and AS2511-RJ Access Server Hardware Installation Guide*.

9.2 C3524 and C3508 Ethernet Switches

Note – When removing and replacing the Ethernet switches, a nonconducting step ladder and a flashlight may be required.

Caution – Never remove or replace a device when system power is on.

This section provides procedures to remove and replace the C3524 and C3508 Ethernet switches, and to connect the Ethernet switches to the network. This section also includes information about installing the 1000BASE-X GBIC module into either Ethernet switch. This chapter contains the following topics:

- Section 9.2.1 “Removing the Ethernet Switches” on page 9-8
- Section 9.2.2 “Replacing the Ethernet Switches” on page 9-10
- Section 9.2.3 “Connecting the Ethernet Switches to the Network” on page 9-12
- Section 9.2.4 “Installing the Ethernet Switch 1000BASE-X GBIC Module” on page 9-13

9.2.1 Removing the Ethernet Switches

Note – Refer to the Cisco *Catalyst 3500 Series XL Installation Guide* for complete details.

Note – As an example, the removal and replacement procedure in this section is for the C3524 Ethernet switch. The removal and replacement of the C3508 Ethernet switch is identical to the removal and replacement of the C3524 Ethernet switch.

1. **Unlock, open, and remove the rack door(s) as appropriate.**
2. **Power off the system.**

   See Section 6.2 “Power On and Off Sequence” on page 6-2.

Caution – Use proper ESD grounding techniques when handling components. Wear an antistatic wrist strap and use an ESD-protected mat. Store ESD-sensitive components in antistatic bags before placing them on any surface.

3. **Disconnect the Ethernet switch cabling.**

   Refer to Chapter 5 “Cabling the Sun TCF Devices”.

4. **Disconnect the power cable from the back panel of the Ethernet switch as described in the Cisco** *Catalyst 3500 Series XL Installation Guide***.**
5. **Using a No. 2 Phillips screwdriver, proceed as follows (**FIGURE 9-5**):**

   a. **Remove the back panel screws securing the Ethernet switch chassis to the mounting plate.**

   b. **Remove the front panel screws securing the Ethernet switch chassis to the rack.**

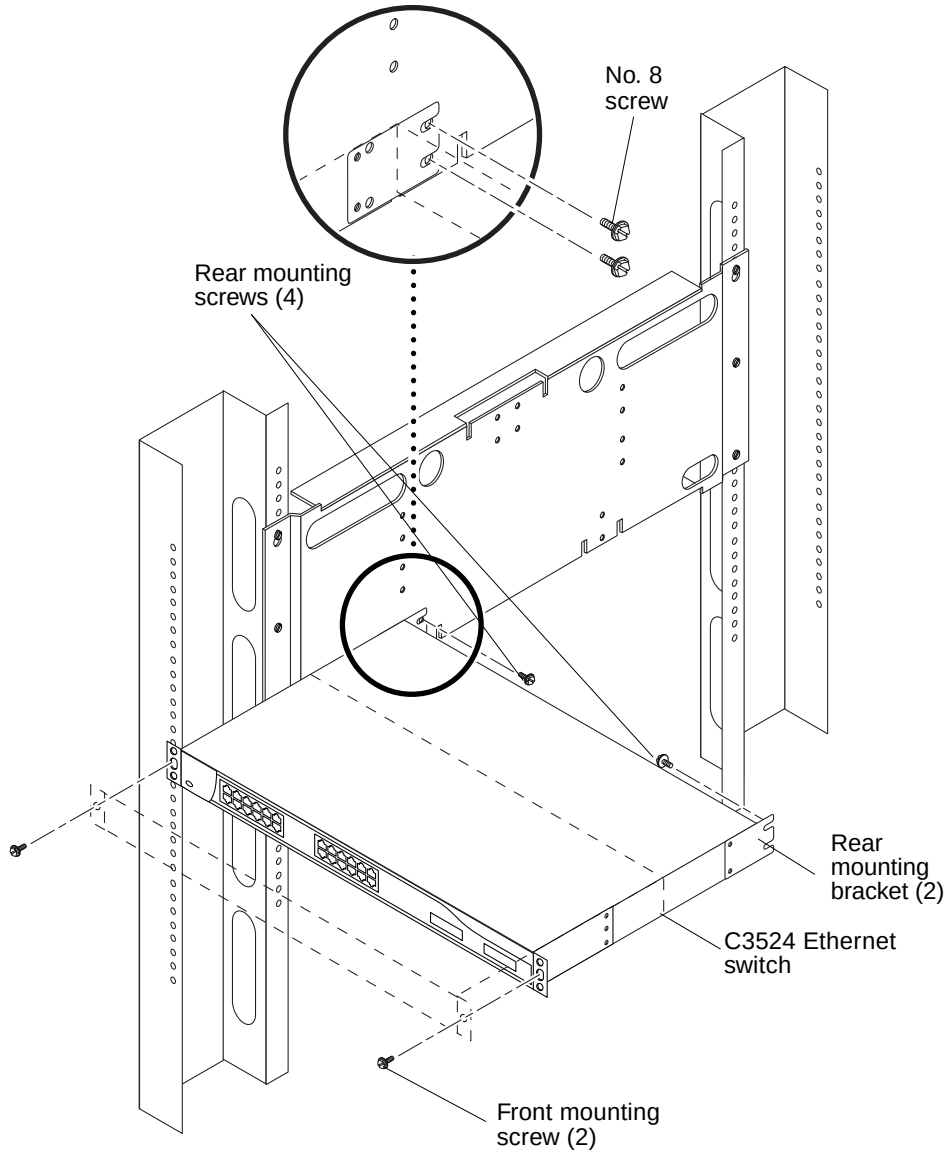


FIGURE 9-5 Removing and Replacing the C3524 Ethernet Switch

6. **Remove the Ethernet switch from the rack.**
7. **Set the Ethernet switch on a workbench.**
8. **Using a No. 2 Phillips screwdriver, remove the two screws securing each back mounting bracket from the Ethernet switch (**FIGURE 9-6**).**

9. **Set the back mounting brackets and screws aside.**

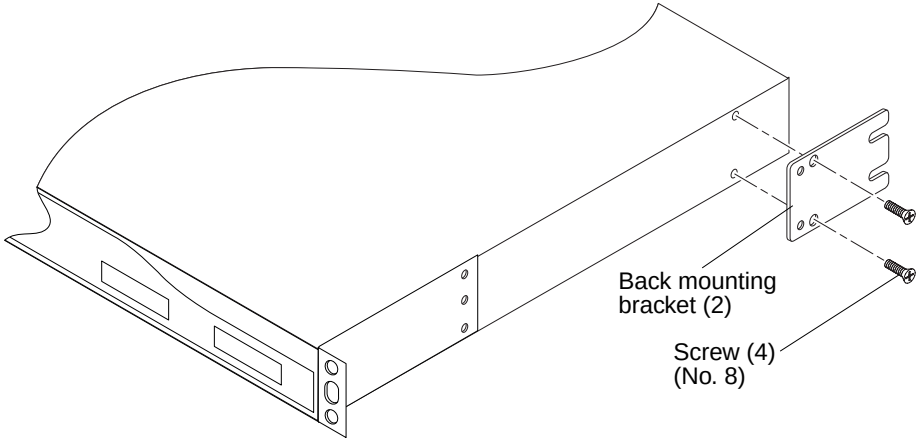


FIGURE 9-6 Removing and Replacing the C3524 Ethernet Rear Bracket

9.2.2 Replacing the Ethernet Switches

1. **Set the replacement Ethernet switch on a workbench.**
2. **Using a No. 2 Phillips screwdriver, install the two screws securing each front mounting bracket to the Ethernet switch (**FIGURE 9-7**).**
3. **Using a No. 2 Phillips screwdriver, install the two screws securing each back mounting bracket to the Ethernet switch (**FIGURE 9-6**).**
4. **Position the Ethernet switch into the rack.**
5. **Using a No. 2 Phillips screwdriver, proceed as follows (**FIGURE 9-5**):**
   a. **Replace the front panel screws securing the Ethernet switch chassis to the rack.**
   b. **Replace the back panel screws securing the Ethernet switch chassis to the rack plate.**

      Refer to FIGURE 9-8 for proper screw placement position.

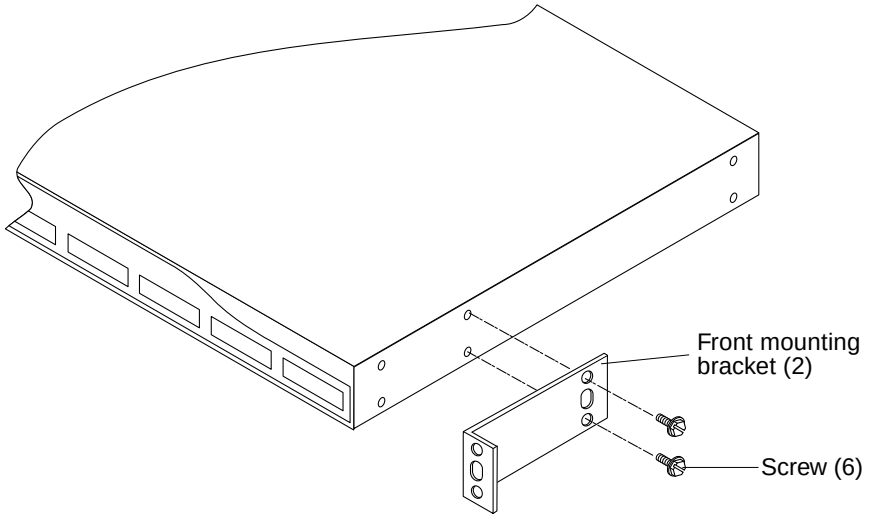


FIGURE 9-7 Installing the Ethernet Switch Front Bracket

6. **Connect the power cable to the back panel of the Ethernet switch as described in the Cisco** *Catalyst 3500 Series XL Installation Guide***.**

7. **Connect the access server cabling.**

   Refer to Chapter 5 “Cabling the Sun TCF Devices”.

8. **Power on the system.**

   See Section 6.2 “Power On and Off Sequence” on page 6-2.

9. **Replace, close, and lock the rack door(s) as appropriate.**

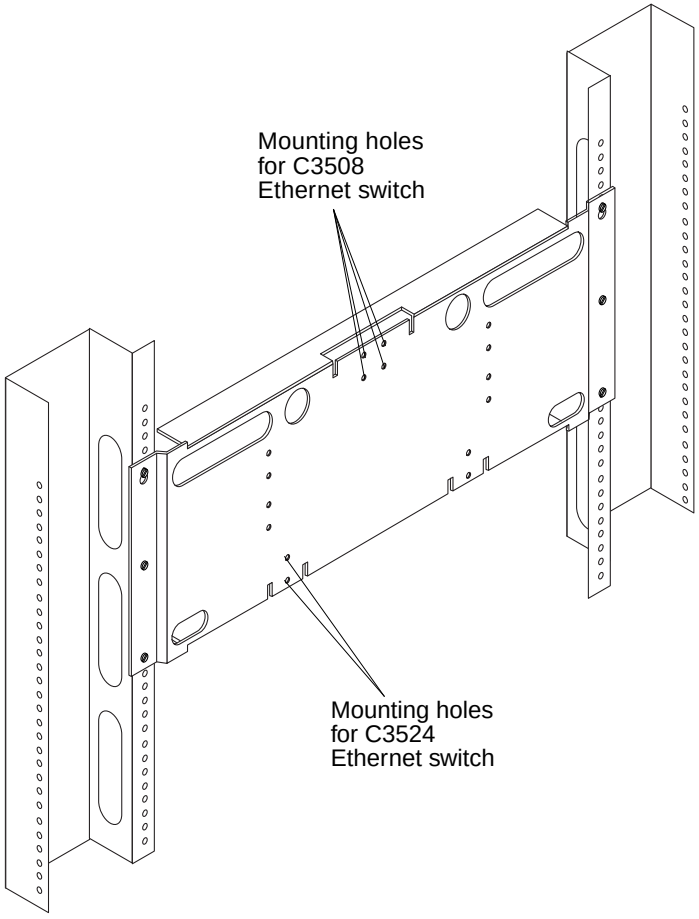


FIGURE 9-8 Mounting Location for the Ethernet Switches

9.2.3 Connecting the Ethernet Switches to the Network

Connect the Ethernet switches to the network as described in the Cisco *Catalyst 3500 Series XL Installation Guide.*

9.2.4 Installing the Ethernet Switch 1000BASE-X GBIC Module

Note – Refer to the Cisco *Catalyst 3500 Series XL Installation Guide* for complete details.

The C3508 Ethernet switch has eight GBIC module slots and the C3524 Ethernet switch has two GBIC module slots. The Ethernet switches use the 1000BASE-SX GBIC modules.

FIGURE 9-9 shows the 1000BASE-X GBIC module installation into the C3508 Ethernet switch. Installation of the GBIC module into the C3524 Ethernet is the same. Refer to the documentation that came with your GBIC module for more information on GBIC installation.

Note – FIGURE 9-9 shows the GBIC module being installed into the C3508 Ethernet switch. Installing the GBIC module connector into the C3524 Ethernet switch is also installed as shown here.

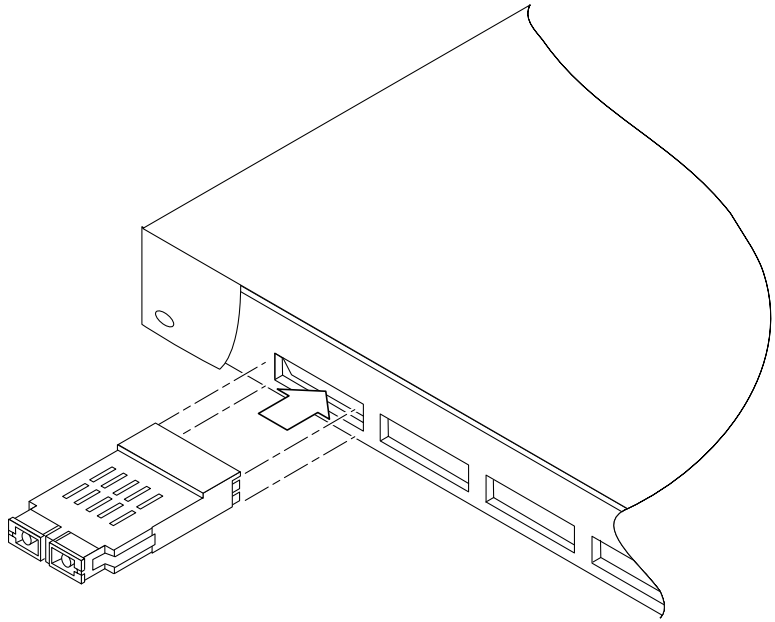


FIGURE 9-9 Installing the 1000BASE-X GBIC Module

9.3 File Server or Compute Engine

This section provides procedures to remove and replace the file server or the compute engine. This section also includes procedures to position the file server or the compute engine for service, and remove and replace FRU's. This chapter contains the following topics:

- Section 9.3.1 "Removing the File Server or Compute Engine" on page 9-15
- Section 9.3.2 "Removing and Replacing the File Server or Compute Engine Main Logic Board" on page 9-18
- Section 9.3.3 "Replacing the File Server or Compute Engine" on page 9-18
- Section 9.3.4 "Positioning the File Server or Compute Engine for Service" on page 9-23
- Section 9.3.5 "Removing and Replacing File Server or Compute Engine Components" on page 9-26
- Section 9.3.6 "Securing the File Server or Compute Engine After Service" on page 9-33
- Section 9.3.7 "Cabling the File Server or Compute Engine" on page 9-35

Note – The file server or compute engine must be removed from the rack when removing and replacing the main logic board. Perform all other file server or compute engine procedures with the file server or compute engine in the service position.

Note – When removing and replacing the file server or compute engine, a nonconducting step ladder and a flashlight may be required.

Note – Refer to the *Sun Enterprise 420R Server Setup and Rackmounting Guide* and the *Sun Enterprise 420R Server Service Manual* for complete details.

Caution – Never remove or replace a device when system power is on.

9.3.1 Removing the File Server or Compute Engine

Caution – Unless the rack is bolted to the floor, the rack stabilizer legs must be extend and the stabilizing feet must be adjusted to the floor. Level and secure the rack to provide a safe working environment.

Caution – The file server or compute engine is heavy. Two people are required to remove the file server or compute engine from the rack in the following procedure.

1. **Unlock, open, and remove the rack door(s) as appropriate.**
2. **Power off the system.**

   See Section 6.2 “Power On and Off Sequence” on page 6-2.
3. **Extend the rack stabilizer legs.**

Caution – Do not disconnect the power cable(s) from the file server or compute engine power inlet(s) unless you are removing or replacing the power distribution board, main logic board, or a power supply. The power cord grounds the file server or compute engine.

4. **Disconnect the power cable(s) from the file server or compute engine power inlet(s).**
5. **Position one person on each side of the file server or compute engine, facing the system glides.**

   When you are both in position, verify that your assistant understands what to do with the file server or compute engine after it is removed. Also agree on a route to follow, and visually inspect it for potential safety hazards (for example, cables on the floor, other people working in the vicinity, and so on).
6. **Using a No. 2 Phillips screwdriver, loosen the four captive screws securing the file server or compute engine to the left and right vertical rails at the front of the rack (**FIGURE 9-10**).**

   The captive screws are in recessed access holes in the filler panels affixed to the file server or compute engine front panel.

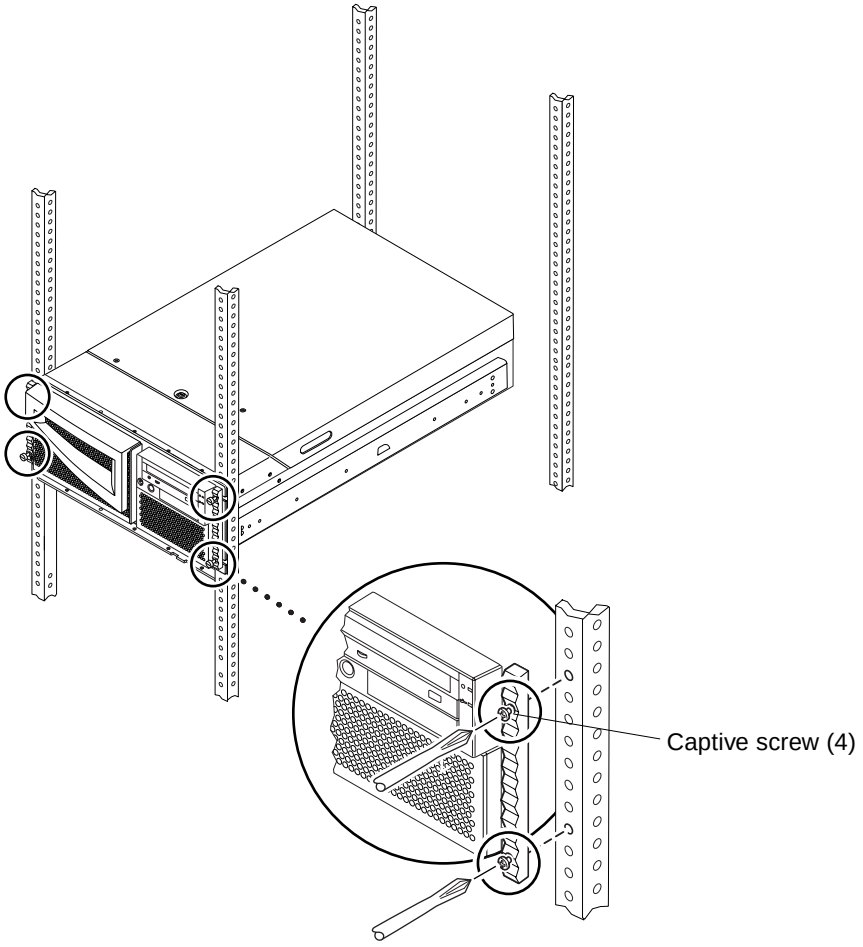


FIGURE 9-10 Loosening the Captive Screws From the Left and Right Vertical Rails

7. **Locate the pair of flat spring catches located at each side of the file server or compute engine and at each rear corner of the file server or compute engine (**FIGURE 9-11**).**

   Each person should visually locate one of the two pair of flat spring catches that release the file server or compute engine from the rack glide.

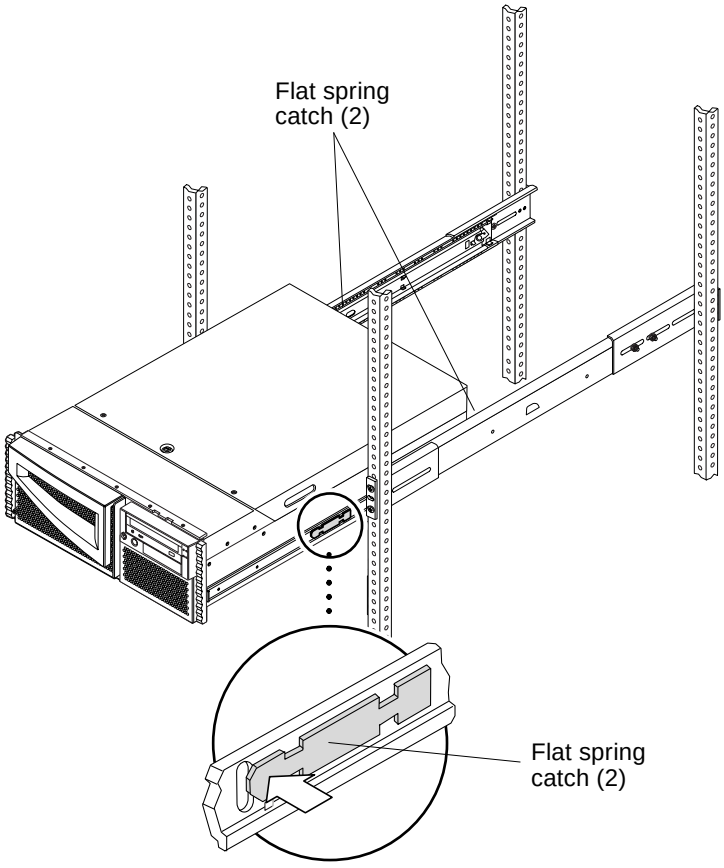


FIGURE 9-11 Locating the Flat Spring Catches

8. **Remove the cabling (see Chapter 5 “Cabling the Sun TCF Devices”).**

9. **Prepare to remove the file server or compute engine.**

   Each person should place one hand on the side flat spring catch and the other hand beneath the chassis, palm up, ready to support the weight of the chassis.

10. **Simultaneously press on both side flat spring catches and then simultaneously release both rear corner flat spring catches. Slide the file server or compute engine out of the glides.**

    Each person presses one pair of spring catches and helps slide the file server or compute engine free of the outer glide, supporting the weight of the file server or compute engine as it slides free of the glides.

11. **Set the file server or compute engine on a workbench or other stable surface.**

12. **Slide the empty rack slides back into their protective outer glides.**

9.3.2 Removing and Replacing the File Server or Compute Engine Main Logic Board

To remove and replace the file server or compute engine main logic board, refer to the *Sun Enterprise 420R Server Service Manual*.

9.3.3 Replacing the File Server or Compute Engine

Caution – The file server or compute engine is heavy, and two people are required to place the file server or compute engine into the rack enclosure glides in the following procedure.

When completing a two-person lift, always communicate your intentions clearly before, during, and after each step to minimize confusion.

Caution – Unless the rack is bolted to the floor, you must extend the rack stabilizer legs and adjust the stabilizing feet to the floor.

1. **Push the runner on each slide assembly as far back as possible into the slide assembly (**FIGURE 9-12**).**

   a. **Push in the inner rail on each slide assembly until it reaches the stops that are located farthest away from the front of the rack.**

   b. **Push in the runner until it stops in the slide assembly.**

2. **Position one person on each side of the file server or compute engine, facing the inner glides on the file server or compute engine chassis.**

   When you are both in position, verify that your assistant understands what to do with the file server or compute engine after it is lifted. Also agree on a route to follow, and visually inspect it for potential safety hazards (for example, cables on the floor, other people working in the vicinity, and so on).

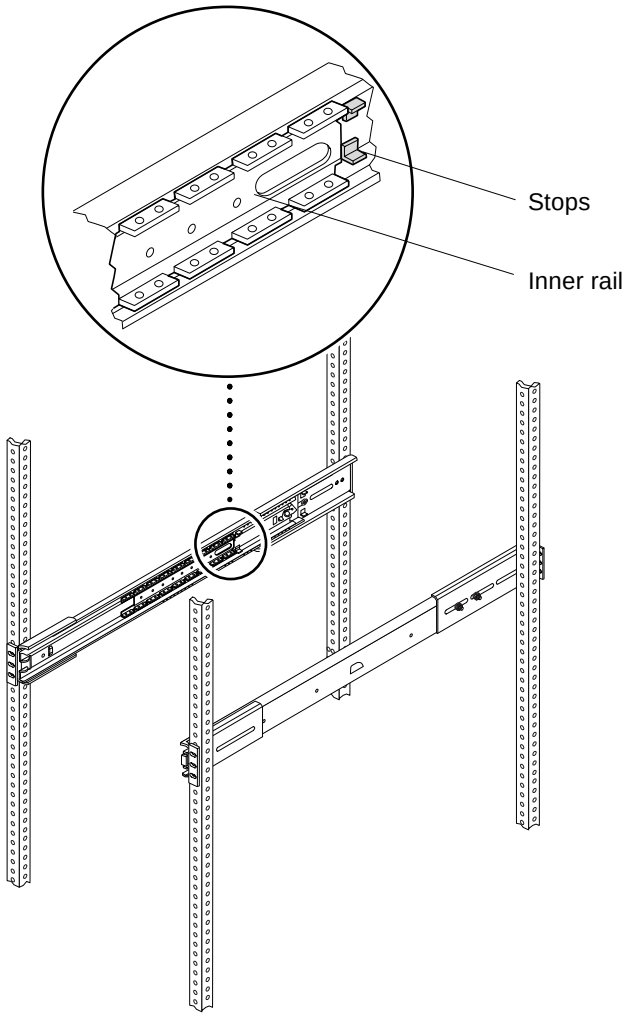


FIGURE 9-12 Pushing in the Runner

3. **Lift the file server or compute engine.**

   Each person should place both hands beneath the chassis and support half the weight of the file server or compute engine.

4. **Carry the file server or compute engine from its location to the front of the rack enclosure.**

5. **Insert the file server or compute engine glides into the inner slides of the rack glides (**FIGURE 9-13**).**

   Verify that the empty rack slides are completely inside their protective outer glides. Slide the crimped end of each file server or compute engine glide into the corresponding inner slide within the rack glide.

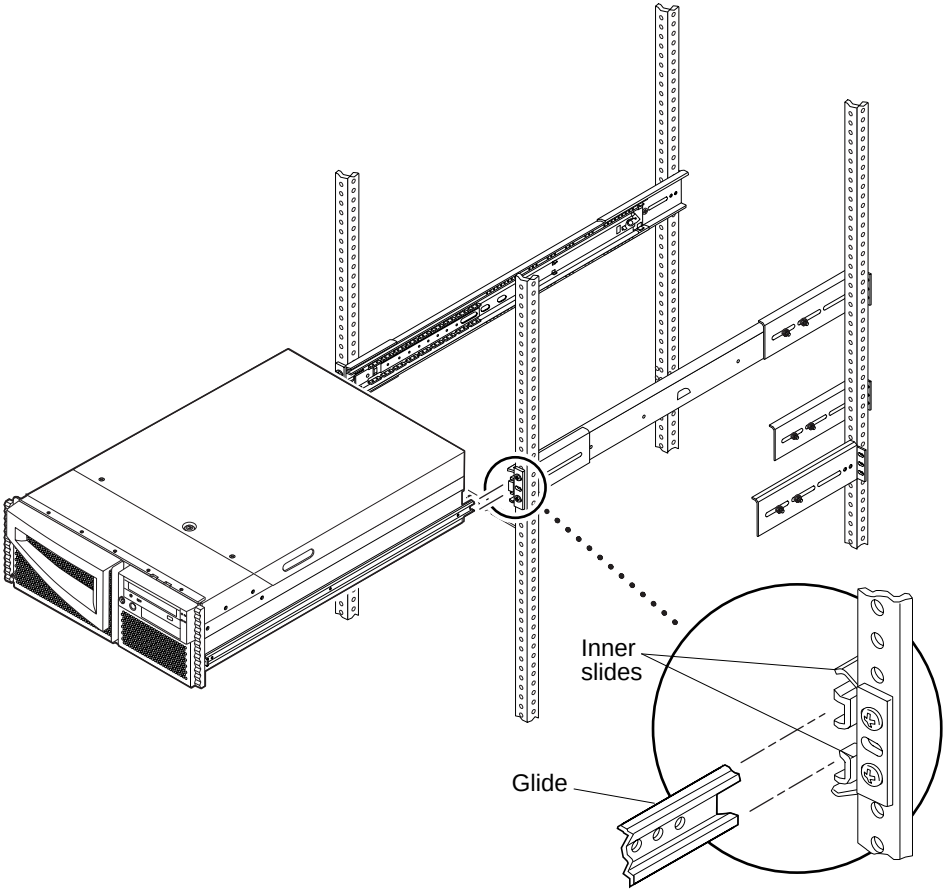


FIGURE 9-13 Inserting the File Server or Compute Engine Glides Into the Inner Slides of the Rack Glides

6. **Slide the file server or compute engine smoothly into the rack until the rear corner flat spring catches stop the file server or compute engine.**

7. **Simultaneously release both rear corner flat spring catches and then simultaneously press on both side flat spring catches (**FIGURE 9-14**).**

8. **Finish sliding the file server or compute engine completely into the rack.**

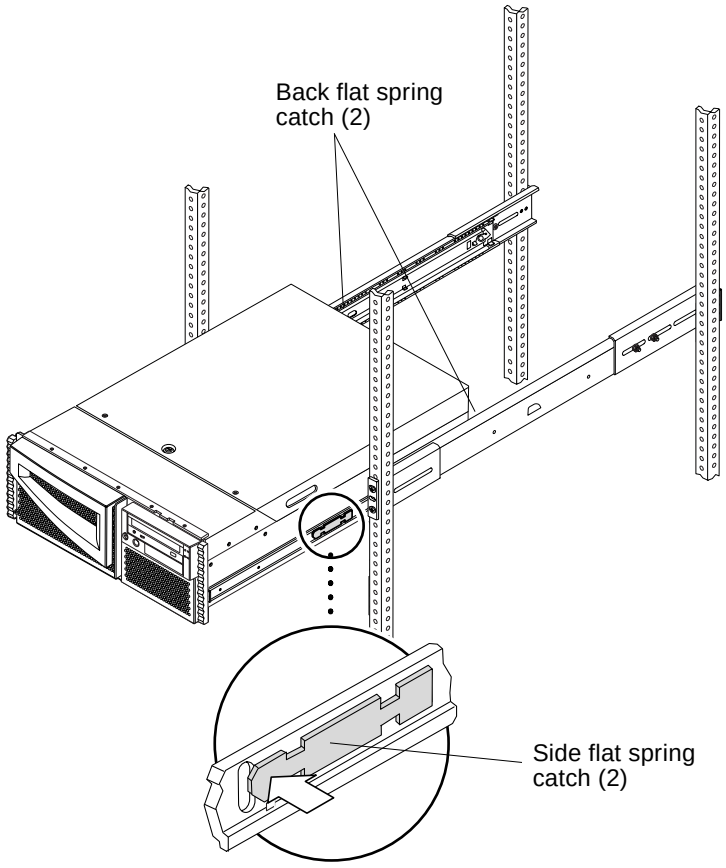


FIGURE 9-14 Pressing the Flat Spring Catches

9. Tighten the four captive screws securing the file server or compute engine (FIGURE 9-15**).**

Using a No. 2 Phillips screwdriver, tighten the captive screws, which are in recessed access holes in the filler panels affixed to the file server or compute engine front panel.

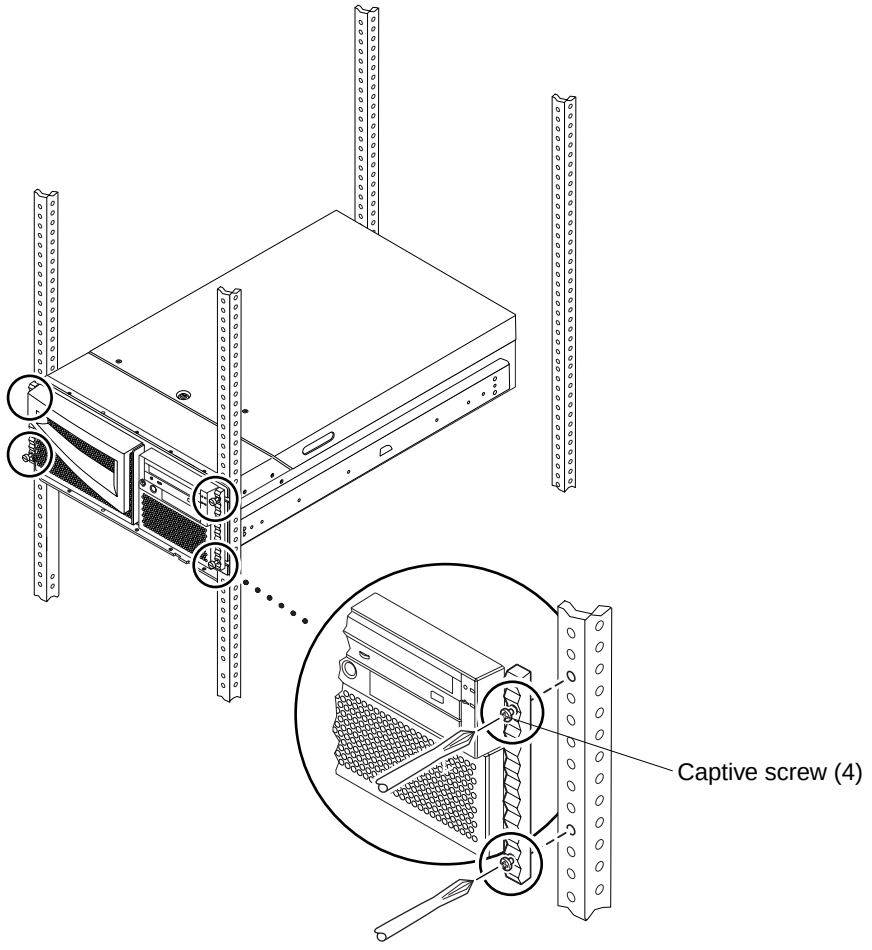


FIGURE 9-15 Securing the File Server or Compute Engine to the Left and Right Vertical Rails

10. **Connect the cabling (see Chapter 5 “Cabling the Sun TCF Devices”).**

    As each cable is reconnected, check it for information indicating cable origin and terminating connection.

11. **Retract the rack stabilizer legs.**

12. **Connect the power cable(s) to the file server or compute engine power inlet(s).**

13. **Power on the system.**

    See Section 6.2 “Power On and Off Sequence” on page 6-2.

14. **Replace, close, and lock the rack door(s) as appropriate.**

9.3.4 Positioning the File Server or Compute Engine for Service

This section provides procedures to position the file server or compute engine in preparation for servicing, and removing and replacing components. This section also contains the following topics:

Note – When positioning the file server or compute engine for service, a nonconducting step ladder and a flashlight may be required.

Note – For detailed instructions for positioning the file server or compute engine for service, refer to the *Sun Enterprise 420R Server Service Manual*.

Note – Unless the rack is bolted to the floor, the rack stabilizer legs must be extended and the stabilizing feet must be adjusted to the floor. The rack must be level and secure to provide a safe working environment.

---

1. **Unlock, open, and remove the rack door(s) as appropriate.**

Caution – Do not disconnect the power cable(s) from the file server or compute engine power inlet(s) unless you are removing or replacing the power distribution board, main logic board, or a power supply. The power cord grounds the file server or compute engine.

---

2. **Power off the system.**

   See Section 6.2 “Power On and Off Sequence” on page 6-2.

3. **Extend the rack stabilizer legs.**

4. **Disconnect cabling (see Chapter 5 “Cabling the Sun TCF Devices”).**

5. **Loosen the four captive screws securing the file server or compute engine to the left and right vertical rails at the front of the rack (**FIGURE 9-16**).**

   Using a No. 2 Phillips screwdriver, loosen the captive screws, which are in recessed access holes in the trim panels affixed to the file server or compute engine front panel.

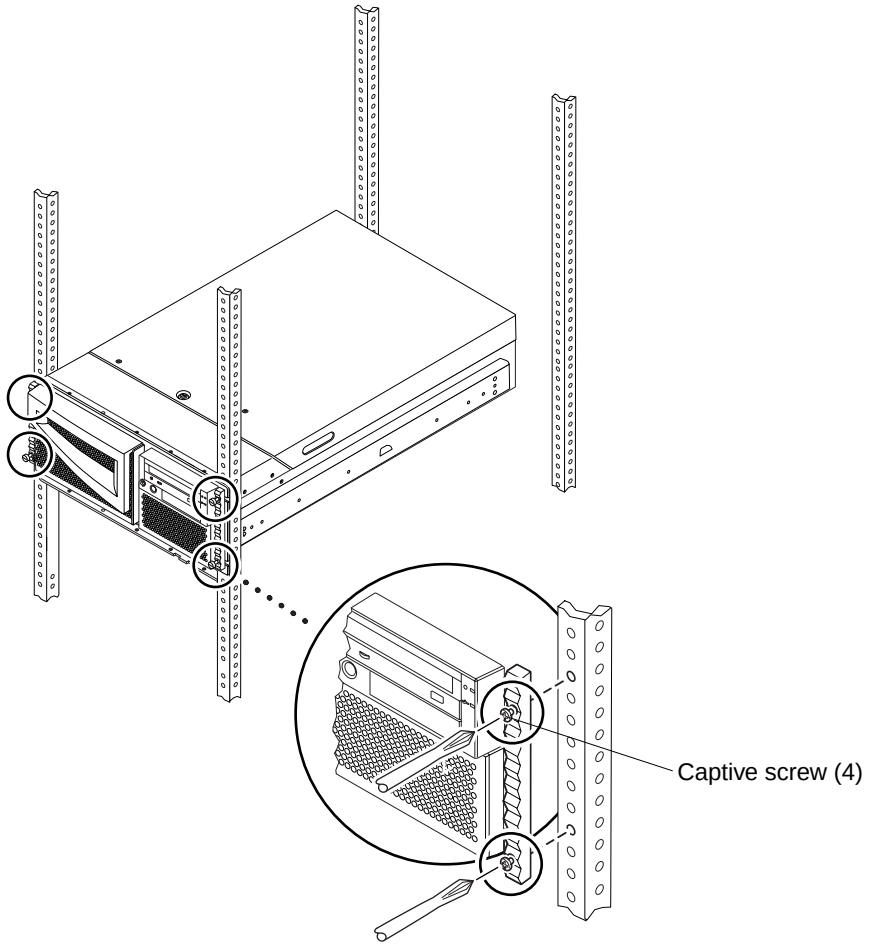


FIGURE 9-16 Loosening the Captive Screws Securing the File Server or Compute Engine to the Rails

6. **Slide the file server or compute engine chassis evenly out of the rack until the inner glides are stopped in the slide by the side flat spring catches (**FIGURE 9-17**).**

   Grasp the file server or compute engine front bezel and pull the file server or compute engine smoothly out of the rack. Continue pulling until the back of the chassis clears the rack and you hear the pair of flat spring catches located at each side of the file server or compute engine engage with an audible clicking sound. The file server or compute engine is then fully extended and secure.

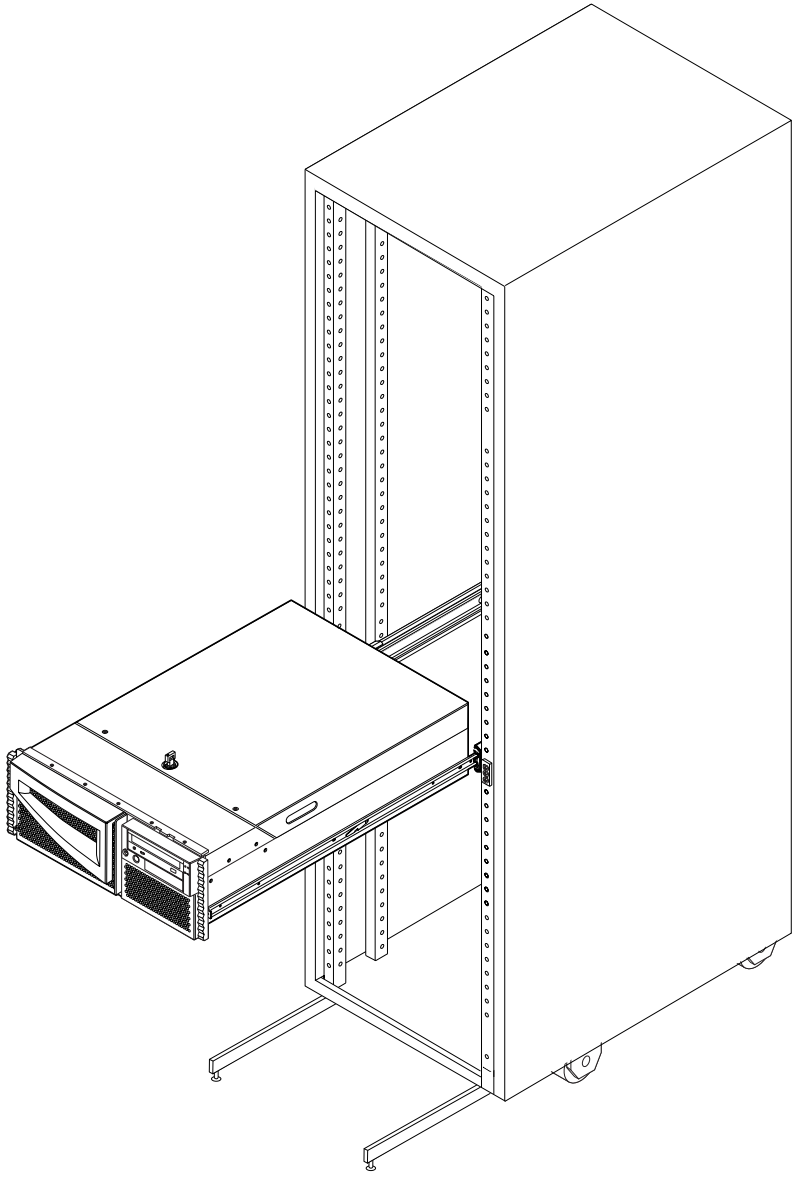


FIGURE 9-17 Sliding the File Server or Compute Engine Chassis out of the Rack

7. Remove the file server or compute engine cover as follows:

a. Unlock the cover.

Turn the back door key counter-clockwise to release the file server or compute engine cover.

b. Loosen the three captive screws securing the cover to the enclosure.

c. Grasp the file server or compute engine cover by the sides, and lift the cover upwards and away from the front of the enclosure.

d. Remove the cover and set it aside.

Note – The file server or compute engine cover hinges on two cutouts in the enclosure back panel. Lift the file server or compute engine cover away from the back of the enclosure.

9.3.5 Removing and Replacing File Server or Compute Engine Components

---

Caution – Do not disconnect the power cable(s) from the file server or compute engine power inlet(s) unless you are removing or replacing the power distribution board, main logic board, or a power supply. The power cord grounds the file server or compute engine.

Caution – Never remove or replace a device when system power is on.

This section provides procedures to remove and replace file server or compute engine components. This section also includes procedures to remove and replace the host adapter fibre channel card and the GigabitEthernet adapter card from the file server.

This section contains the following topics:

- Section 9.3.5.1 “Removing and Replacing the File Server or Compute Engine FRUs” on page 9-27
- Section 9.3.5.2 “Removing a File Server Host Adapter” on page 9-27
- Section 9.3.5.3 “Replacing a File Server Host Adapter” on page 9-29
- Section 9.3.5.4 “Removing the File Server GigabitEthernet Adapter” on page 9-30
- Section 9.3.5.5 “Replacing the File Server GigabitEthernet Adapter” on page 9-32

9.3.5.1 Removing and Replacing the File Server or Compute Engine FRUs

To remove and replace the file server or compute engine FRUs, refer to the *Sun Enterprise 420R Server Service Manual*.

9.3.5.2 Removing a File Server Host Adapter

Note – Refer to the *Sun StorEdge PCI FC-100 Host Adapter Installation Manual* for further information.

---

1. **Position the file server for service.**

   See Section 9.3.4 “Positioning the File Server or Compute Engine for Service” on page 9-23.

Caution – Use proper ESD grounding techniques when handling components. Wear an antistatic wrist strap and use an ESD-protected mat. Store ESD-sensitive components in antistatic bags before placing them on any surface.

---

2. **Attach the adhesive copper strip of the wrist strap to the metal casing of the file server power supply. Wrap the other end twice around your wrist, with the adhesive side against your skin.**
3. **Disconnect the fiber optic cable from the host adapter card (**FIGURE 9-18**).**

Note – The host adapter Fibre Channel cards are located in PCI slots 2 and 3.

---

4. **Remove the screw securing the host adapter to the PCI slot. Retain the screw.**
5. **Applying even pressure at both corners of the host adapter, pull the host adapter until it unseats from the slot.**
6. **Remove the host adapter card from the PCI slot.**
7. **Push the two dust covers into the host adapter gigabit interface converter (GBIC) connectors (**FIGURE 9-19**).**

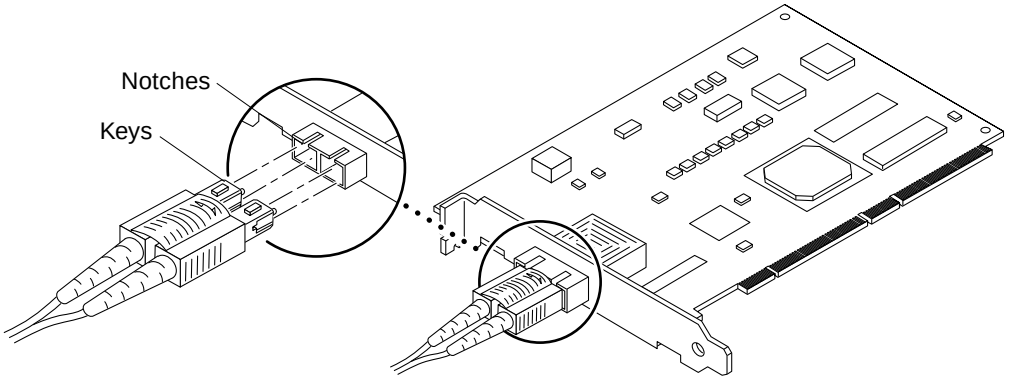


FIGURE 9-18 Removing and Replacing the Host Adapter Fiber Optic Cable

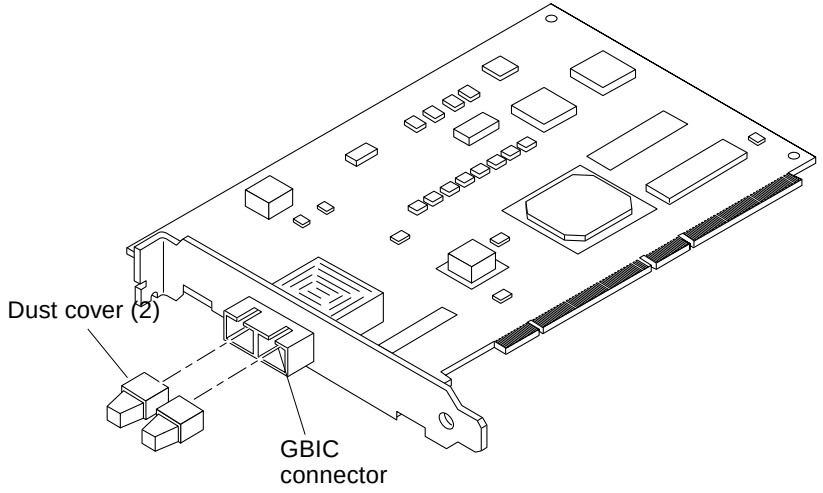


FIGURE 9-19 Removing and Replacing the Host Adapter Dust Covers

9.3.5.3 Replacing a File Server Host Adapter

Caution – Use proper ESD grounding techniques when handling components. Wear an antistatic wrist strap and use an ESD-protected mat. Store ESD-sensitive components in antistatic bags before placing them on any surface.

Note – Refer to the *Sun StorEdge PCI FC-100 Host Adapter Installation Manual* for further information.

1. **Holding the host adapter by the edges, unpack and place it on an antistatic surface.**
2. **Pull the two dust covers out of the host adapter GBIC connectors (**FIGURE 9-18 **on page 9-28).**
3. **Holding the host adapter by the edges, align the host adapter edge connector with the PCI slot.**

Note – The host adapter Fibre Channel cards are located in PCI slots 2 and 3.

4. **Slide the host adapter face plate into the small slot at the end of the file server PCI opening.**

Caution – Do not use excessive force when installing the adapter into the PCI slot. You may damage the adapter's PCI connector. If the adapter does not seat properly when you apply even pressure, remove the adapter and carefully reinstall it again.

5. **Applying even pressure at both corners of the host adapter, push the host adapter until it is firmly seated in the PCI slot.**
6. **Secure the host adapter to the PCI slot using the previously removed screw.**
7. **Disconnect the wrist strap.**

Caution – Fiber optic cables have keyed connectors; the connectors can only be inserted into GBICs as shown in.

8. **Connect the fiber optic cable into the host adapter GBIC connector until you hear a click (**FIGURE 9-19 **on page 9-28).**

9. **After replacing the host adapter, but before securing the file server from service, refer to the** *Sun StorEdge PCI FC-100 Host Adapter Installation Guide* **to verify the replacement.**

10. **Secure the file server from service (see Section 9.3.6 “Securing the File Server or Compute Engine After Service” on page 9-33).**

9.3.5.4 Removing the File Server GigabitEthernet Adapter

Note – Refer to the *Sun GigabitEthernet/P 2.0 Adapter Installation and User’s Guide* for further information.

---

1. **Position the file server for service.**

   See Section 9.3.4 “Positioning the File Server or Compute Engine for Service” on page 9-23.

Caution – Use proper ESD grounding techniques when handling components. Wear an antistatic wrist strap and use an ESD-protected mat. Store ESD-sensitive components in antistatic bags before placing them on any surface.

---

2. **Attach the adhesive copper strip of the wrist strap to the metal casing of the file server power supply. Wrap the other end twice around your wrist, with the adhesive side against your skin**

3. **Disconnect the fiber optic cable from the GigabitEthernet adapter card (**FIGURE 9-20**).**

Note – The GigabitEthernet adapter card is located in PCI slot 1.

---

4. **Remove the screw securing the GigabitEthernet adapter card to the PCI slot. Retain the screw.**

5. **Applying even pressure at both corners of the GigabitEthernet adapter card, pulling the GigabitEthernet adapter card until it unseats from the slot.**

6. **Remove the GigabitEthernet adapter card from the PCI slot.**

7. **Push the two dust covers into the GigabitEthernet adapter card GBIC connectors (**FIGURE 9-21**).**

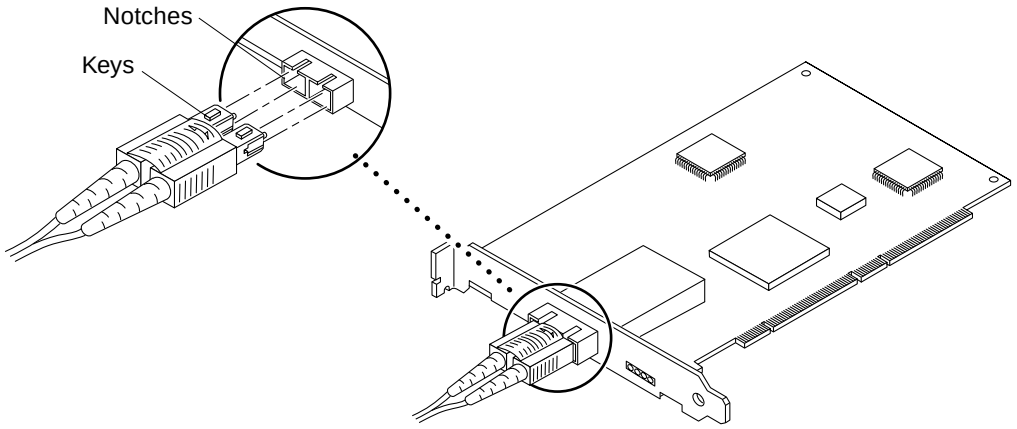


FIGURE 9-20 Removing and Replacing the GigabitEthernet Adapter Fiber Optic Cable

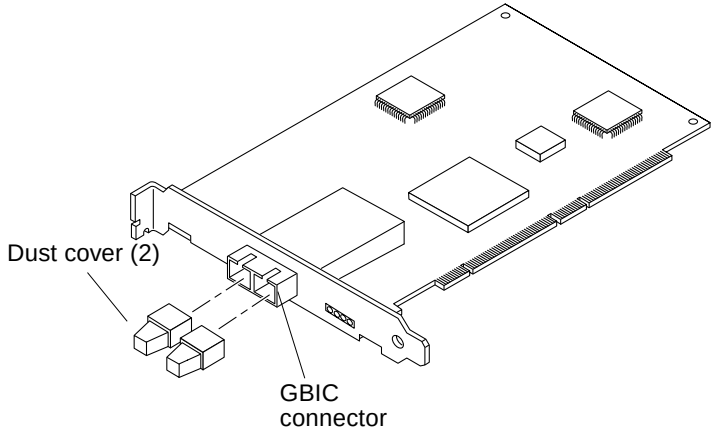


FIGURE 9-21 Removing and Replacing the GigabitEthernet Adapter Dust Covers

9.3.5.5 Replacing the File Server GigabitEthernet Adapter

Caution – Use proper ESD grounding techniques when handling components. Wear an antistatic wrist strap and use an ESD-protected mat. Store ESD-sensitive components in antistatic bags before placing them on any surface.

Note – Refer to the *Sun GigabitEthernet/P 2.0 Adapter Installation and User's Guide* for further information.

1. **Holding the GigabitEthernet adapter card by the edges, unpack and place it on an antistatic surface.**
2. **Pull the two dust covers out of the GigabitEthernet adapter card GBIC connectors (**FIGURE 9-21 **on page 9-31).**
3. **Holding the GigabitEthernet adapter card by the edges, align the GigabitEthernet adapter edge connector with the PCI slot.**

Note – The GigabitEthernet adapter card is located in PCI slot 1.

4. **Slide the GigabitEthernet adapter face plate into the small slot at the end of the file server PCI opening.**

Caution – Do not use excessive force when installing the adapter into the PCI slot. You may damage the adapter's PCI connector. If the adapter does not seat properly when you apply even pressure, remove the adapter and carefully reinstall it again.

5. **Applying even pressure at both corners of the GigabitEthernet adapter card, push the GigabitEthernet adapter card until it is firmly seated in the PCI slot.**
6. **Secure the GigabitEthernet adapter card to the PCI slot using the previously removed screw.**
7. **Disconnect the wrist strap.**

Caution – Fiber optic cables have keyed connectors; the connectors can only be inserted into GBICs as shown in.

8. **Connect the fiber optic cable into the GigabitEthernet adapter GBIC connector until you hear a click (**FIGURE 9-20 **on page 9-31).**

9. **After replacing the GigabitEthernet adapter card, but before securing the file server from service, refer to the** *Sun GigabitEthernet/P 2.0 Adapter Installation and User's Guide* **to verify the replacement.**

10. **Secure the file server from service (see Section 9.3.6 "Securing the File Server or Compute Engine After Service" on page 9-33).**

9.3.6 Securing the File Server or Compute Engine After Service

1. **Replace the file server or compute engine cover as follows:**

   a. **Replace the cover by grasping the cover by the sides and lowering it towards the front of the enclosure.**

   b. **Tighten the three captive screws securing the cover to the enclosure.**

   c. **Lock the system cover.**

      Use the back door key to turn the key clockwise to lock the system cover.

2. **Simultaneously press on the side flat spring catches and slide the file server or compute engine into the rack.**

   Grasp the file server or compute engine front bezel and push the file server or compute engine smoothly into the rack.

3. **Tighten the four captive screws securing the file server or compute engine to the left and right vertical rails at the front of the rack (**FIGURE 9-22**).**

   Using a No. 2 Phillips screwdriver, tighten the captive screws, which are in recessed access holes in the trim panels affixed to the file server or compute engine front panel.

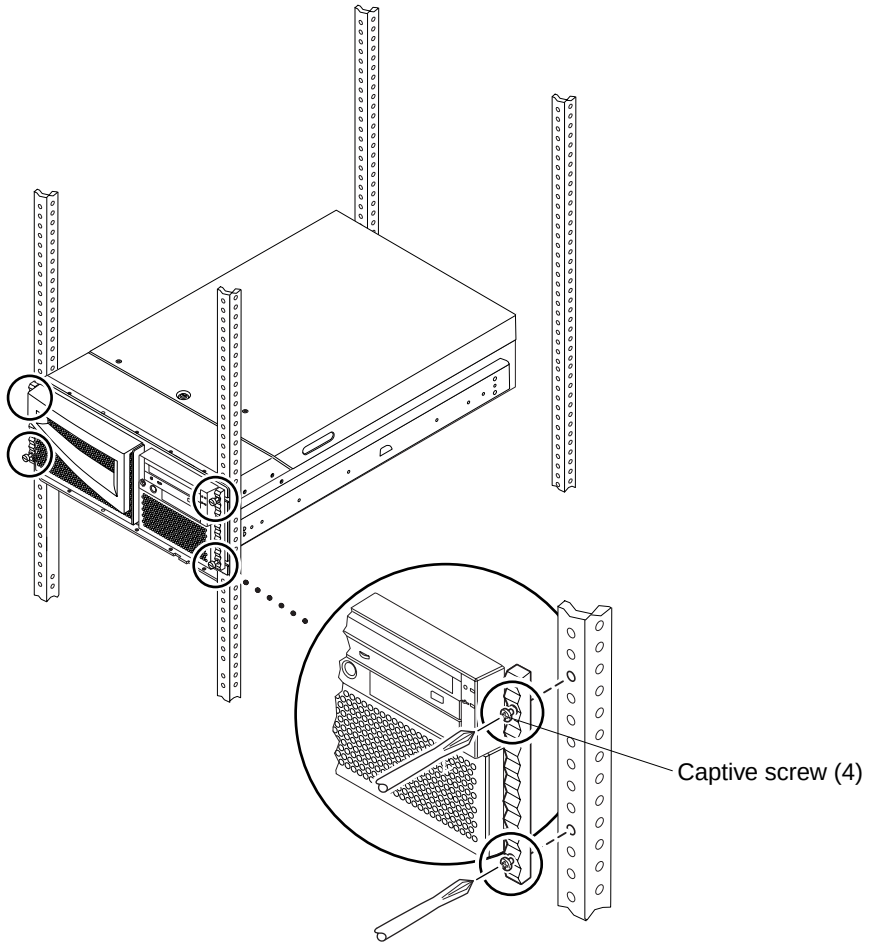


FIGURE 9-22 Tightening the Captive Screws Securing the File Server or Compute Engine to the Rails

4. **Connect cabling.**

   See Chapter 5 “Cabling the Sun TCF Devices”.

5. **Retract the rack stabilizer legs.**

6. **Power on the system.**

   See Section 6.2 “Power On and Off Sequence” on page 6-2.

7. **Replace, close, and lock the rack door(s) as appropriate.**

9.3.7 Cabling the File Server or Compute Engine

To cable the file server or compute engine, refer to Chapter 5 “Cabling the Sun TCF Devices”.

9.4 Disk Array

Caution – Never remove or replace a device when system power is on.

To remove and replace the disk array, proceed as follows.

- Section 9.4.1 “Removing a Disk Array” on page 9-36
- Section 9.4.2 “Replacing a Disk Array” on page 9-38
- Section 9.4.3 “Cabling a Disk Array” on page 9-39
- Section 9.4.4 “Removing and Replacing the Disk Array FRUs” on page 9-39

Note – Refer to the *Sun StorEdge A5000 Installation and Service Manual* for complete details.

9.4.1 Removing a Disk Array

Caution – The rack can become front-heavy while the disk array chassis is being replaced. Unless the rack is bolted to the floor, ensure that the stabilizer legs are extended before proceeding. Failure to extend the legs can result in the rack tipping forward and injuring personnel.

Caution – This replacement requires two people to lift and move the disk array. Use care to avoid injury. A disk array with a baseplate attached may weigh up to 130 pounds (59 kg).

When completing a two-person procedure, always communicate your intentions clearly before, during, and after each step to minimize confusion.

Follow the instructions on preparing for service in this documentation. If necessary, be sure to:

- Extend the stabilizer bars
- Remove or open the top front panel

1. **Power off the system.**

   See Section 6.2 “Power On and Off Sequence” on page 6-2.

Caution – Use proper ESD grounding techniques when handling components. Wear an antistatic wrist strap and use an ESD-protected mat. Store ESD-sensitive components in antistatic bags before placing them on any surface.

2. **Disconnect the power cable.**
3. **Disconnect the fiber optic cable(s) from the GBIC connectors.**

Caution – Always extend a rack stabilizer legs before removing the locking screws from the front of the disk array.

4. **Remove the locking screws from the front of the disk array (**FIGURE 9-23**).**
5. **With the aid of an assistant, slide the disk array out of the rack until the chassis baseplate is stopped by the tabs on the side rails in the rack (**FIGURE 9-24**).**
6. **With the aid of an assistant (one person on each side), tilt the front of the chassis down and remove it from the rack.**
7. **Place the disk array on a surface capable of supporting 130 pounds (59 kg).**

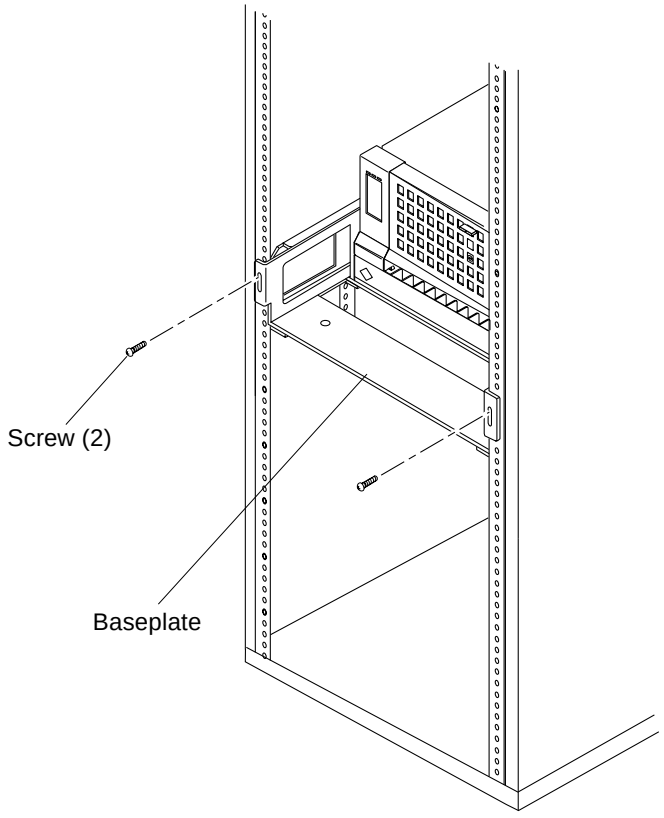


FIGURE 9-23 Removing the Screws Securing the Baseplate to the Side Brackets

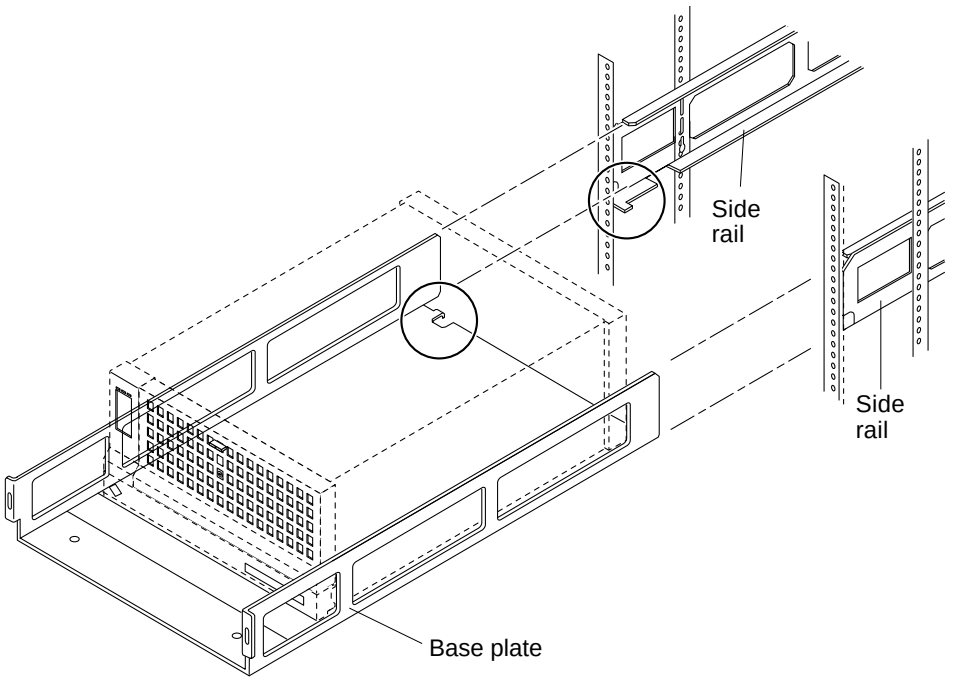


FIGURE 9-24 Removing the Chassis and Baseplate From the Rack

9.4.2 Replacing a Disk Array

Caution – The rack can become front-heavy while the disk array chassis is being replaced. Unless the rack is bolted to the floor, ensure that the stabilizer legs are extended before proceeding. Failure to extend the legs can result in the rack tipping forward and injuring personnel.

Caution – This replacement requires two people to lift and move the disk array. Use care to avoid injury. A disk array with a baseplate attached may weigh up to 130 pounds (59 kg).

When completing a two-person procedure, always communicate your intentions clearly before, during, and after each step to minimize confusion.

Caution – Use proper ESD grounding techniques when handling components. Wear an antistatic wrist strap and use an ESD-protected mat. Store ESD-sensitive components in antistatic bags before placing them on any surface.

1. **With the aid of an assistant (one person on each side), position the disk array into the rack.**
2. **With the aid of an assistant, slide the disk array into the rack until the chassis baseplate is stopped by the tabs on the side rails in the rack (**FIGURE 9-24 **on page 9-38).**
3. **Replace the locking screws securing the front of the disk array (**FIGURE 9-23 **on page 9-37).**
4. **Connect the fiber optic cable(s) to the GBIC connectors (see Chapter 5 “Cabling the Sun TCF Devices”).**
5. **Connect the power cable.**
6. **Power on the system.**

   See Section 6.2 “Power On and Off Sequence” on page 6-2.

9.4.3 Cabling a Disk Array

To cable a disk array, refer to Chapter 5 “Cabling the Sun TCF Devices”.

9.4.4 Removing and Replacing the Disk Array FRUs

To remove and replace the disk array FRUs, refer to the *Sun StorEdge A5000 Installation and Service Manual*.

CHAPTER 10

Removing and Replacing Rack FRUs

This chapter describes how to remove and replace the following Sun StorEdge™ expansion cabinet (rack) subassemblies. This chapter covers the following topics:

- Section 10.1 “Tools Required” on page 10-1
- Section 10.2 “Key Switch” on page 10-2
- Section 10.3 “AC Input Cable Assembly” on page 10-4
- Section 10.4 “Power Sequencer” on page 10-6
- Section 10.5 “Side Panel” on page 10-7

Note – The keys for the Sun TCF system are found in the rack and in the *Sun TCF Accessory Kit*, 565-1656.

10.1 Tools Required

- No. 2 Phillips screwdriver
- 1/4-inch, slotted screwdriver
- Needlenose pliers
- Set of Allen wrenches

10.2 Key Switch

Use the following procedures to remove and replace the key switch.

Caution – The power cables to each power sequencer must be disconnected from the power source if you want to stop all AC power input to the rack.

10.2.1 Removing the Key Switch

1. **Be sure that the power to the rack is completely turned off.**

   Refer to Section 6.2.2 “Powering Off the Rack” on page 6-5.

2. **Disconnect the key switch cable connector from the cable adapter cable connector near the back of the power sequencers (**FIGURE 10-1**).**

   The adapter cable remains connected to the power sequencer.

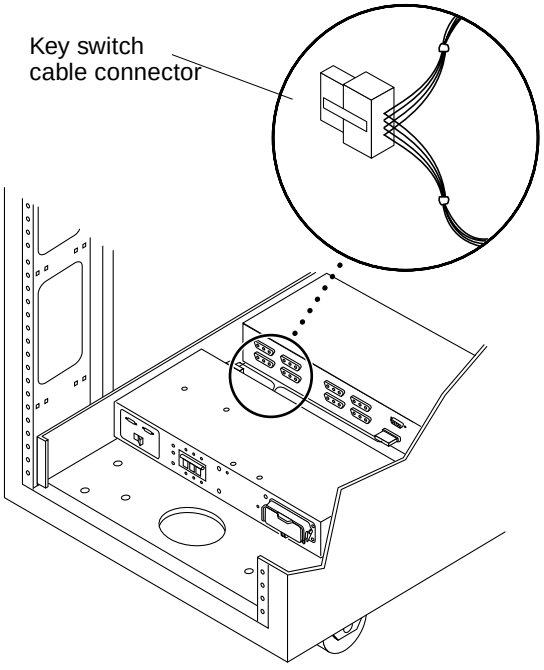


FIGURE 10-1 Removing and Replacing the Key Switch

3. **Remove the Phillips screws and cable ties that secure the key switch cable to the chassis frame.**

   Each screw secures a clamp on the frame that holds the cable in place.

4. **Facing the back of the key switch on the inside of the rack, use a pair of needlenose pliers to slide out and remove the metal clip that secures the key switch to the rack (**FIGURE 10-2**).**

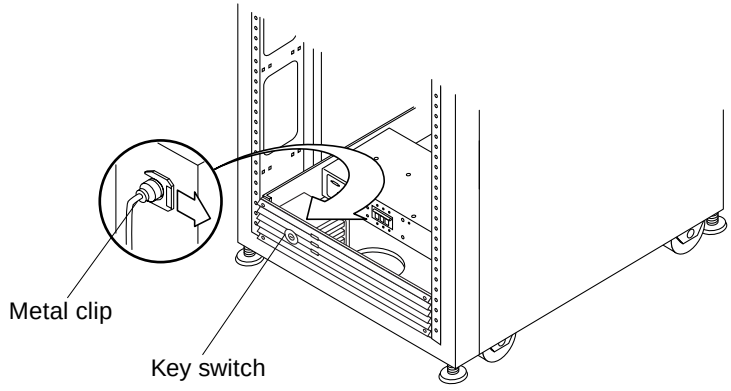


FIGURE 10-2 Removing and Replacing the Key Switch

10.2.2 Replacing the Key Switch

1. **Insert the key switch into the panel opening.**
2. **Facing the back of the key switch on the inside of the rack, slide the metal clip onto the notch of the key switch body to secure it in place (**FIGURE 10-2**)**
3. **Route the key switch cable to the power sequencer, securing it to the chassis frame with cable ties and Phillips screws.**

   Each screw secures a clamp on the frame that holds the cable in place.

4. **Connect the key switch cable connector to the adapter-cable connector near the back of the power sequencer (**FIGURE 10-1**).**
5. **Power on the rack.**

   Refer to Section 6.2.1 “Powering On the Rack” on page 6-3.

Note – To maintain proper airflow, filler panels must be installed over locations that do not have devices mounted.

10.3 AC Input Cable Assembly

Use the following procedures to remove and replace the key switch.

Caution – The power cables to each power sequencer must be disconnected from the power source if you want to stop all AC power input to the rack.

10.3.1 Removing the AC Input Cable Assembly

1. **Be sure that the power to the rack is completely turned off.**

   Refer to Section 6.2.2 “Powering Off the Rack” on page 6-5.

2. **Disconnect the power cord from the power connector on the power sequencer (**FIGURE 10-3**).**

3. **Close the power connector cover.**

4. **Pull the latch up over the cover to secure it.**

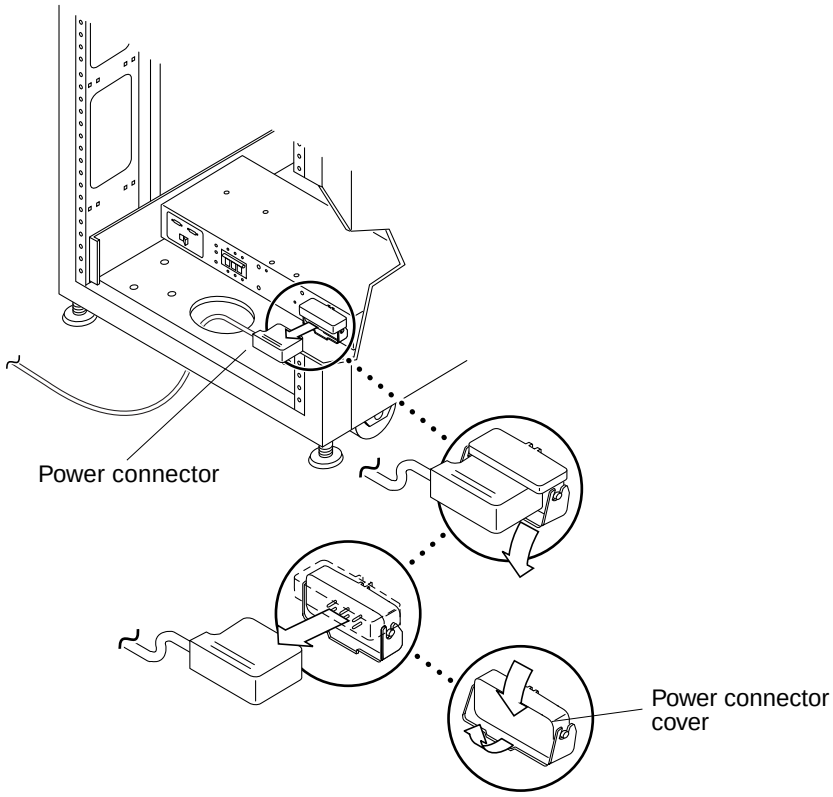


FIGURE 10-3 Removing and Replacing the AC Input Cable

10.3.2 Replacing the AC Input Cable Assembly

Caution – Use proper ESD grounding techniques when handling components. Wear an antistatic wrist strap and use an ESD-protected mat. Store ESD-sensitive components in antistatic bags before placing them on any surface.

1. **Pull back the power connector cover (**FIGURE 10-3**).**
2. **Connect the power cord to the power connector.**
3. **Pull the latch over the power cord to secure it to the power connector.**
4. **Power on the rack.**

   Refer to Section 6.2.1 “Powering On the Rack” on page 6-3.

10.4 Power Sequencer

Use the following procedures to remove and replace the key switch.

Caution – The power cables to each power sequencer must be disconnected from the power source if you want to stop all AC power input to the rack.

10.4.1 Removing the Power Sequencer

1. **Be sure that the power to the rack is completely turned off.**

   Refer to Section 6.2.2 “Powering Off the Rack” on page 6-5.

2. **Disconnect the key switch adapter cable from the mating power supply connector at the rear of the power sequencer (**FIGURE 10-4**).**

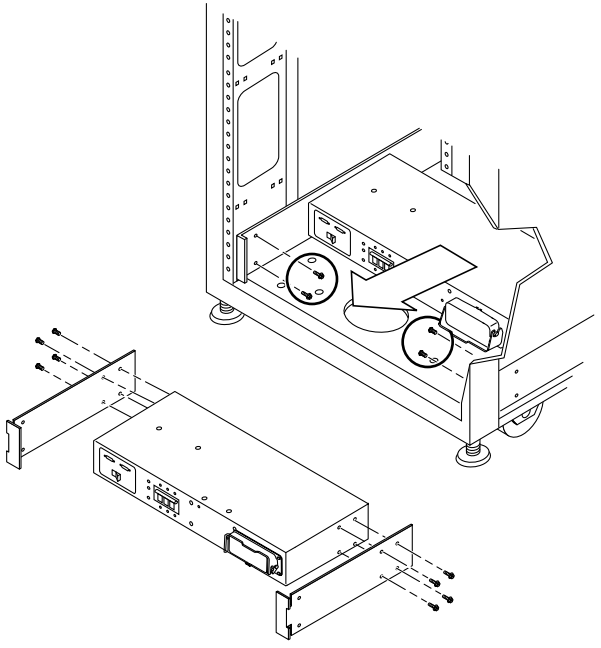


FIGURE 10-4 Removing and Replacing the Power Sequencer

3. **Remove the power cord from the power sequencer.**
   See Section 10.3 “AC Input Cable Assembly” on page 10-4.
4. **Remove the screws that secure the sequencer to the chassis.**
5. **Slide out the power sequencer to access the power cables.**
6. **Disconnect all other power cables from the sequencer.**
7. **Remove the power sequencer.**

10.4.2 Replacing the Power Sequencer

1. **Place the power sequencer on the floor.**
2. **Connect all cables on the back of the power sequencer.**
3. **Slide the power sequencer into the rack (**FIGURE 10-4**).**
4. **Tighten the screws that secure the sequencer to the chassis.**
5. **Connect the power cord.**
   See Section 10.3 “AC Input Cable Assembly” on page 10-4.
6. **Power on the rack.**
   Refer to Section 6.2.1 “Powering On the Rack” on page 6-3.

10.5 Side Panel

Use the following procedures to remove and replace the side panel.

10.5.1 Removing the Side Panel

Use an Allen wrench to loosen the four .25-inch shoulder screws that fasten the panel to the rack and remove the panel from the rack (FIGURE 10-5).

10.5.2 Replacing the Side Panel

Align the panel screw holes to the rack screw holes. Use an Allen wrench and tighten the four .25-inch shoulder screws to fasten the panel to the rack (FIGURE 10-5).

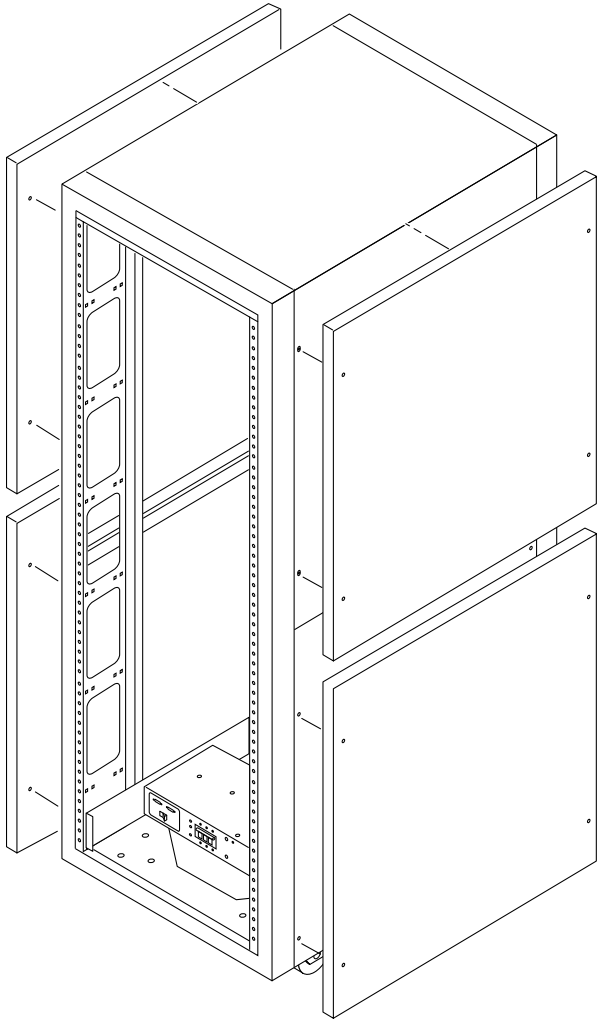


FIGURE 10-5 Removing and Replacing the Side Panels

APPENDIX **A**

Product Specifications

This appendix provides product specifications for the Sun TCF.

- Section A.1 “Physical Specifications” on page A-1
- Section A.2 “Supporting Documentation” on page A-3
- Section A.3 “Electrical Specifications” on page A-4
- Section A.4 “Environmental Requirements” on page A-5
- Section A.5 “Clearance and Service Access” on page A-6

A.1 Physical Specifications

TABLE A-1 through TABLE A-4 lists the physical specifications for the base rack, the expansion rack with 2-CPU compute engines, the expansion rack with 4-CPU compute engines, and the star rack.

TABLE A-1 Base Rack Physical Specifications

Specification	U.S.A.	Metric
Height	73.5 in	187 cm
Width	24.0 in	61 cm
Depth	36.5 in	93 cm
Weight (approximate)	890 lb	404.5 kg

TABLE A-2 Expansion Rack With 2-CPU Compute Engines Physical Specifications

Specification	U.S.A.	Metric
Height	73.5 in	187 cm
Width	24.0 in	61 cm
Depth	36.5 in	93 cm
Weight (approximate)	990 lb	454.3 kg

TABLE A-3 Expansion Rack With 4-CPU Compute Engines Physical Specifications

Specification	U.S.A.	Metric
Height	73.5 in	187 cm
Width	24.0 in	61 cm
Depth	36.5 in	93 cm
Weight (approximate)	1019 lb	470.3 kg

TABLE A-4 Star Rack Physical Specifications

Specification	U.S.A.	Metric
Height	73.5 in	187 cm
Width	24.0 in	61 cm
Depth	36.5 in	93 cm
Weight (approximate)	1055 lb	479.5 kg

A.2 Supporting Documentation

TABLE A-5 lists the supporting documentation where physical specifications for specific Sun TCF devices are found.

TABLE A-5 Product Specifications

Harwdare Device	Supporting Documentation	Document Part Number
Rack	*Sun StorEdge Expansion Cabinet Installation and Service Manual*	805-3067
Disk array	*Sun StorEdge A5000 Installation and Service Manual*	802-7573
File server	*Sun Enterprise 420R Server Service Manual*	806-1080
Compute engine	*Sun Enterprise 420R Server Service Manual*	806-1080
Airflow baffle	*Sun StorEdge Expansion Cabinet Airflow Baffle Installation Guide*	806-0274
StorEdge PCI FC-100 host adapter Fibre Channel circuit card	*Sun StorEdge PCI FC-100 Host Adapter Installation Manual*	805-3682
GigabitEthernet/P 2.0 adapter circuit card	*Sun GigabitEthernet/P 2.0 Adapter Installation and User's Guide*	805-2785
Access server	*Cisco AS2509-RJ and AS2511-RJ Access Server Hardware Installation Guide* `http://www.cisco.com`	78-3333
C3524 Ethernet switch	*Catalyst 3500 Series XL Installation Guide* `http://www.cisco.com`	*78-6456*
C3508 Ethernet switch	*Catalyst 3500 Series XL Installation Guide* `http://www.cisco.com`	*78-6456*

A.3 Electrical Specifications

TABLE A-6 lists the electrical specifications for the Sun TCF.

TABLE A-6 Sun TCF Electrical Specifications

Parameter	Value
Voltage	
North America and Japan	200 to 240 Vac, 47 to 63 Hz
International	200 to 240 Vac, 47 to 63 Hz
Input current	
Individual file server	3.9A
Individual compute engine (2-CPU)	3.0A
Individual compute engine (4-CPU)	3.9A
Individual disk array	4.2A
Base rack	28.7A
Expansion rack (with nine 2-CPU compute engines	27.0A
Expansion rack (with nine 4-CPU compute engines	35.1A
Star rack	32.9A

A.4 Environmental Requirements

TABLE A-7 lists the environmental specifications for the Sun TCF. TABLE A-8 lists the air conditioning tonnage for each Sun TCF rack.

TABLE A-7 Sun TCF Environmental Requirements

Parameter	Value
Temperature	
Operating	41°F to 104°F (5°C to 40°C)
Non-operating	-4°F to 140°F (-20°C to 60°C)
Humidity	
Operating	20% to 80% RH, noncondensing 80.6°F (27°C) maximum wet bulb
Non-operating	5% to 93% RH, noncondensing
Altitude	
Operating	0 to 9,843 feet (0 to 3 km)
Non-operating	0 to 39,370 feet (0 to 12 km)

TABLE A-8 Sun TCF Rack Air Conditioning Tonnage

Rack	Air conditioning tonnage
Base rack	1.95 tons
Expansion rack	2.40 tons
Star rack	2.25 tons

A.5 Clearance and Service Access

TABLE A-9 lists the clearance and service access for a Sun TCF rack.

TABLE A-9 Sun TCF Clearance and Service Access

	With Service Access	Without Service Access
Front	48 inches 122 cm	24 inches 61 cm
Rear	36 inches 92 cm	24 inches 61 cm
Left	36 inches[1] 92 cm	2 inches[2] 51 cm
Right	36 inches[1] 92 cm.	0

1. Side access may be required for some service procedures. Refer to the documentation that came with the devices.
2. The disk array requires a clearance of at least two inches for airflow. Unless otherwise stated in the documentation that shipped with your device, no clearance access is required.

APPENDIX **B**

Parts Table

TABLE B-1 lists the replaceable components for the Sun TCF by part number. A brief description of each listed component is also provided. TABLE B-2 lists the Sun TCF devices with replaceable components. The listed documents associated with each device contains FRU part numbers for the device. A brief description of each listed device is also provided.

Note – The part numbers listed in the following table are correct as of this manual's publication date, but are subject to change without notice. Consult your authorized Sun sales representative or service provider to confirm a part number prior to ordering a replacement part.

TABLE B-1 Sun TCF Replaceable Parts

Replaceable Device	Part Number	Description
C3524 Ethernet switch	F370-4170	Cisco C3524, 24-port Ethernet switch
Access server	F370-4169	Cisco AS2511-RJ access server
Cable assembly	F370-4190	Cisco WS-G5484 1000BASE-SX Module cable assembly
C3508 Ethernet switch	F370-4189	Cisco C3508, 8-port Ethernet switch
GBIC module	F370-2303	Tri GBIC OE module. Used with disk array
AUI transceiver	F370-4229	10BASE-T AUI transceiver
Serial port adapter	F370-4228	Cisco 29-0881-01 serial port adapter
Cisco Ethernet cable	F370-4231	Cisco 72-1258-01 Ethernet cable
1000BASE-SX module	F370-4190	Cisco 1000BASE-SX module. Used with C3524 and C3508 Ethernmet switches
GigabitEthernet adapter circuit card	F501-4373-07	Sun GigabitEthernet/P 2.0 adapter

TABLE B-1 Sun TCF Replaceable Parts *(Continued)*

Replaceable Device	Part Number	Description
Host adapter circuit card	F375-0040-03	Sun StorEdge PCI FC-100 host adapter.
Cable assembly	F530-4114-01	79.2" T1 CIP-IWF1PE RJ45 shielded cable
Cable assembly	F530-2962-01	72-125 Ethernet cable
Cable assembly	F537-1004-01	2-meter fiber optic cable
Cable assembly	F537-1006-01	15-meter fibre optic cable

Note – The documents listed in the following table contain FRU part numbers for each device. The FRU part numbers that are listed in their respective document are correct as of the document's publication date, but are subject to change without notice. Consult your authorized Sun sales representative or service provider to confirm a part number prior to ordering a replacement part.

TABLE B-2 Sun TCF Devices With Replaceable Parts

Device	Document Part Number	Description
Rack	805-3067	Sun StorEdge expansion cabinet
File server/compute engine	806-1080	Sun Enterprise 420R server
Disk array	802-7573	Sun StorEdge A5200 disk array
Airflow baffle	595-5204	340-5665 air flow baffle
Access server	78-3333	*Cisco AS2509-RJ and AS2511-RJ access server*
C3524 Ethernet switch	*78-6456*	*Catalyst 3500 Series XL Ethernet switch*
C3508 Ethernet switch	*78-6456*	*Catalyst 3500 Series XL Etherney switch*

Index

A

AC input cable assembly
  removing, 10-4
  replacing, 10-5
access server
  cabling, 5-14, 5-34, 5-44
  configuring, 7-3
  connect
    to network, 9-6
    to system terminal, 9-7
  power off, 6-6
  power on, 6-6
  prepare to service, 8-5
  removing, 9-2
  replacing, 9-4
access server 2, cabling, 5-25
adjusting rack leveling pads, 3-3
air conditioning, 2-4
airflow baffle
  removing, 4-10
  replacing, 4-12
  repositioning, 4-9

B

base rack configuration, 1-3, 2-2

C

C3508 Ethernet switch, 1-17, 1-18
  cabling, 5-45
  connect to network, 9-12
  installing 1000BASE-X GBIC module, 9-13
  power off, 6-6
  power on, 6-6
  prepare to service, 8-5
  replacing, 9-10
C3524 Ethernet switch, 1-17
  cabling, 5-12, 5-23, 5-31, 5-42
  connect to network, 9-12
  installing 1000BASE-X GBIC module, 9-13
  power off, 6-6
  power on, 6-6
  prepare to service, 8-5
  replacing, 9-10
cabling
  access server, 5-14, 5-34, 5-44
  access server 2, 5-25
  C3508 Ethernet switch, 5-45
  C3524 Ethernet switch, 5-12, 5-23, 5-31, 5-42
  compute engine, 5-11, 5-21, 5-31, 5-42, 9-35
  disk array, 5-7, 5-21, 5-31, 9-39
  disk array 1-to-disk array 2, 4-9, 5-41
  disk array 1-to-file server, 4-9, 5-8
  disk arrays, 5-39
  disk arrays-to-file server, 5-40
  file server, 5-9, 5-21, 5-31, 5-42, 9-35
  rack, 3-8
  Sun TCF system
    large farm configuration, 5-34
    medium farm configuration example 1, 5-15

medium farm configuration example 2, 5-27
small farm configuration, 5-1
clearance, 2-5
clearance and service access, Sun TCF system, A-6
compute engine, 1-13
cabling, 5-11, 5-21, 5-31, 5-42, 9-35
positioning for service, 9-23
power off, 6-10
power on, 6-8
prepare to service, 8-4
ratio to file server, 1-2
removing, 9-15
components, 9-26
FRUs, 9-27
main logic board, 9-18
replacing, 9-18
components, 9-26
FRUs, 9-27
main logic board, 9-18
securing after service, 9-33
configuration
base rack, 1-3, 2-2
expansion rack, 1-6, 2-2
star rack, 1-9, 2-2
configuring
access server, 7-3
compute engine, 7-10
file server, 7-10
connect
rack power cord, 3-11
to network
access server, 9-6
C3508 Ethernet switch, 9-12
C3524 Ethernet switch, 9-12
to system terminal, access server, 9-7

D

devices with replaceable components, B-1
disk array, 1-12
cabling, 5-7, 5-21, 5-31, 9-39
installing
additional GBICs, 4-8
additional interface boards, 4-8
power off, 6-7
power on, 6-7
prepare to service, 8-4
removing, 9-36
replacing, 9-39
disk array 1-to-disk array 2 cabling, 4-9, 5-41
disk array 1-to-file server cabling, 4-9, 5-8
disk array FRUs
removing, 9-39
replacing, 9-39
disk arrays cabling, 5-39
disk arrays-to-file server cabling, 5-40

E

electrical specifications, Sun TCF system, A-4
environmental requirements, Sun TCF system, 2-3, A-5
example 1 medium farm configuration, 5-15
example 2 medium farm configuration, 5-27
expansion rack configuration, 1-6, 2-2

F

factory settings, reverting to, 7-10
file server, 1-13
cabling, 5-9, 5-21, 5-31, 5-42, 9-35
positioning for service, 9-23
power off, 6-10
power on, 6-8
prepare to service, 8-4
ratio to compute engine, 1-2
removing, 9-15
components, 9-26
FRUs, 9-27
Gigabit Ethernet adapter, 9-30
host adapter, 9-27
main logic board, 9-18
replacing, 9-18
components, 9-26
FRUs, 9-27
Gigabit Ethernet adapter, 9-32
host adapter, 9-29
main logic board, 9-18
securing after service, 9-33
final rack cabling tasks, 3-15

H

heating, 2-4

I

IEC 309 single-phase, 32A connector for 200–240V international operation, 3-12
install
- 1000BASE-X GBIC module
  - into C3508 Ethernet switch, 9-13
  - into C3524 Ethernet switch, 9-13
- disk array
  - additional GBICs, 4-8
  - additional interface boards, 4-8
- rack
  - floor brackets, 3-6
  - stabilizer legs, 3-4
- second disk array, 4-1
  - chassis into rack, 4-4
  - connecting power cable, 6-6
  - rails, 4-2
- system console, 7-1

K

key switch
- removing, 10-2
- replacing, 10-3
- standby mode, 6-10

L

large farm configuration, 5-34
- cabling access server, 5-44
- cabling C3508 Ethernet switch, 5-45
- cabling C3524 Ethernet switch, 5-42
- cabling compute engine, 5-42
- cabling disk array 1-to-disk array 2, 5-41
- cabling disk arrays, 5-39
- cabling disk arrays-to-file server, 5-40
- cabling file server, 5-42
- point-to-point connections
  - between star rack and three small farm base rack, 5-37
  - within star rack, 5-36

M

medium farm configuration
- example 1, 5-15
  - cabling access server 2, 5-25
  - cabling C3524 Ethernet switch, 5-23
  - cabling compute engine, 5-21
  - cabling disk array, 5-21
  - cabling file server, 5-21
  - point-to-point connections between base rack and expansion rack 2, 5-17
- example 2, 5-27
  - cabling access server, 5-34
  - cabling C3524 Ethernet switch, 5-31
  - cabling compute engine, 5-31
  - cabling disk array, 5-31
  - cabling file server, 5-31
  - point-to-point connections between base racks, 5-28

moving the rack, 3-2

N

NEMA L6-30P for 200-240V North American operation, 3-12

P

physical specifications, Sun TCF system, A-1
placing the rack, 3-2
planning
- site, 2-1
- space, 2-2

point-to-point
- cabling, second disk array, 5-8
- connections
  - between base rack and expansion rack, 5-4
  - between base rack and expansion rack 2, 5-17
  - between base racks, 5-28
  - between star rack and three small farm base racks, 5-37
  - within base rack, 5-3
  - within star rack, 5-36

positioning for service
- compute engine, 9-23
- file server, 9-23

power
- off sequence, Sun TCF system, 6-2
- on sequence, Sun TCF system, 6-2

power off
- access server, 6-6

C3508 Ethernet switch, 6-6
C3524 Ethernet switch, 6-6
compute engine, 6-10
disk array, 6-7
file server, 6-10
rack, 6-5
power on
access server, 6-6
C3508 Ethernet switch, 6-6
C3524 Ethernet switch, 6-6
compute engine, 6-8
disk array, 6-7
file server, 6-8
rack, 6-3
power sequencer
removing, 10-6
replacing, 10-7
prepare
for assembly and installation, 2-1
to power on, Sun TCF system, 6-1
to service
access server, 8-5
C3508 Ethernet switch, 8-5
C3524 Ethernet switch, 8-5
compute engine, 8-4
disk array, 8-4
file server, 8-4
product specifications, xxxiv

R

rack, 1-12
adjusting leveling pads, 3-3
cabling, 3-8
connect power cord, 3-11
final cabling tasks, 3-15
installing, 3-1
floor brackets, 3-6
stabilizer legs, 3-4
moving, 3-2
physical characteristics, 2-3
placing, 3-2
power off, 6-5
power on, 6-3
unpacking, 3-1
ratio, file server-to-compute engine, 1-2
removing
AC input cable assembly, 10-4
access server, 9-2
airflow baffle, 4-10
compute engine, 9-15
components, 9-26
FRUs, 9-27
main logic board, 9-18
disk array, 9-36
disk array FRUs, 9-39
file server, 9-15
components, 9-26
FRUs, 9-27
Gigabit Ethernet adapter, 9-30
host adapter, 9-27
main logic board, 9-18
key switch, 10-2
power sequencer, 10-6
side panel, 10-7
replaceable components, B-1
replacing
AC input cable assembly, 10-5
access server, 9-4
airflow baffle, 4-12
C3508 Ethernet switch, 9-10
C3524 Ethernet switch, 9-10
compute engine, 9-18
components, 9-26
FRUs, 9-27
main logic board, 9-18
disk array, 9-39
disk array FRUs, 9-39
file server, 9-18
components, 9-26
FRUs, 9-27
Gigabit Ethernet adapter, 9-32
host adapter, 9-29
main logic board, 9-18
key switch, 10-3
power sequencer, 10-7
side panel, 10-8
repositioning airflow baffle, 4-9
reverting to factory settings, 7-10

S

second disk array
installing, 4-1
chassis into rack, 4-4
connecting power cable, 4-6

rails, 4-2
point-to-point cabling, 5-8
securing after service
compute engine, 9-33
file server, 9-33
service access, 2-5
side panel
removing, 10-7
replacing, 10-8
site planning, 2-1
small farm configuration, 5-1
cabling access server, 5-14
cabling C3524 Ethernet switch, 5-12
cabling compute engine, 5-11
cabling disk array, 5-7
cabling disk array 1-to-file server, 5-8
cabling file server, 5-9
point-to-point cabling with second disk array, 5-8
point-to-point connections
between base rack and expansion rack, 5-4
within base rack, 5-3
space planning, 2-2
specifications, product, xxxiv
star rack configuration, 1-9, 2-2
Sun Management Center, description, 8-1
Sun TCF system
air conditioning, 2-4
applications, 1-1
clearance and service access, A-6
configuration
base rack, 2-2
expansion rack, 2-2
star rack, 2-2
devices, 1-12
C3508 Ethernet switch, 1-18
C3524 Ethernet switch, 1-17
compute engine, 1-13
disk array, 1-12
file server, 1-13
I/O, supported, 1-21
rack, 1-12
electrical specifications, A-4
environmental requirements, 2-3, A-5
heating, 2-4
physical specifications, A-1
power off sequence, 6-2
power on sequence, 6-2
preparing to power on, 6-1
product overview, 1-1
rack physical characteristics, 2-3
troubleshooting, 8-4
ventilation, 2-4
SunVTS
description, 8-2
references, 8-3
requirements, 8-3
supported, I/O devices, 1-21
system
console, installing, 7-1
devices, Sun TCF, 1-12

T

troubleshoot Sun TCF system, 8-4

U

unpacking and installing rack, 3-1

V

ventilation, 2-4